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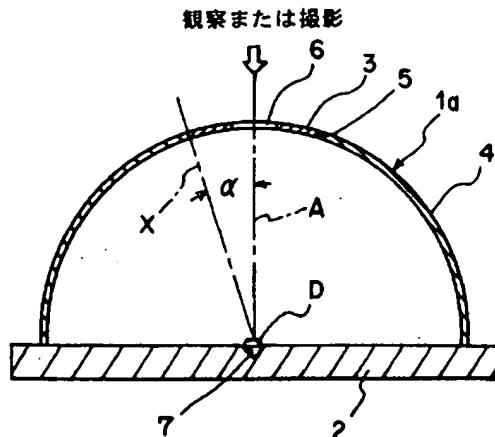
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(54)【発明の名称】 ダイヤモンド等の宝石の観察または撮影用器具および輝度測定用器具並びに撮影用器具を用いた宝石の撮影方法

(57)【要約】

【目的】 ダイヤモンドのカットの良否に応じた紋様を鮮明に捉えることができる器具を提供すること

【構成】 半球状またはドーム状若しくは錐状の本体1aを有し、この本体1aは光を透過させる材料で構成されるとともに、本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、上端部分3は、その外縁5と基台部2の中央に形成された載置部7の中心とを結ぶ直線X若しくは外縁5と本体1aの下端中心とを結ぶ直線Xが、本体1aの軸線Aに対し10°～25°の角度αを有するよう構成され、さらに上端部分3の中心に観察用開孔6を設けたダイヤモンド等の宝石の観察または撮影用器具である。



## 【特許請求の範囲】

【請求項1】 内部が中空である半球状またはドーム状若しくは錐状の本体1aと、中央に宝石の載置部7を有し、前記本体1aを支持する基台部2とを有し、前記本体1aは光を透過させる材料で構成されるとともに、本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と載置部7の中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^\circ \sim 25^\circ$ の角度 $\alpha$ を有するよう構成され、さらに上端部分3の中心に観察用開孔6が形成されたダイヤモンド等の宝石の観察または撮影用器具。

【請求項2】 内部が中空である半球状またはドーム状若しくは錐状の部材100および該部材100の上端に設けられた開口部9に立設された筒体101からなる本体1aと、中央に宝石の載置部7を有し、前記本体1aを支持する基台部2とを有し、前記本体1aは光を透過させる材料で構成されるとともに、筒体101を含む本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と載置部7の中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^\circ \sim 25^\circ$ の角度 $\alpha$ を有するよう構成されたダイヤモンド等の宝石の観察または撮影用器具。

【請求項3】 内部が中空で且つ下端が開放した半球状またはドーム状若しくは錐状の本体1aを有し、前記本体1aは光を透過させる材料で構成されるとともに、本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と本体1aの下端中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^\circ \sim 25^\circ$ の角度を有するよう構成され、さらに上端部分3の中心に観察用開孔6が形成されたダイヤモンド等の宝石の観察または撮影用器具。

【請求項4】 内部が中空で且つ下端が開放した半球状またはドーム状若しくは錐状の部材100および該部材100の上端に設けられた開口部9に立設された筒体101からなる本体1aを有し、該本体1aは光を透過させる材料で構成されるとともに、筒体101を含む本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と本体1aの下端中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^\circ \sim 25^\circ$ の角度を有するよう構成されたダイヤモンド等の宝石の観察または撮影用器具。

【請求項5】 上端部分3が筒体101とその周囲の部材100の部分から構成されている請求項2または4に記載のダイヤモンド等の宝石の観察または撮影用器具。

【請求項6】 上端部分3が筒体101のみから構成されている請求項2または4に記載のダイヤモンド等の宝石の観察または撮影用器具。

【請求項7】 上端部分3が筒体101の上部側の部分から構成されている請求項2または4に記載のダイヤモンド等の宝石の観察または撮影用器具。

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【請求項8】 筒体101に拡大レンズ8を有する請求項2、4、5、6または7に記載のダイヤモンド等の宝石の観察または撮影用器具。

【請求項9】 観察用開孔6に拡大レンズ8を有する請求項1または3に記載のダイヤモンド等の宝石の観察または撮影用器具。

【請求項10】 本体1aの上端部分3が白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、本体1aの残余部分4が、これよりも明度の低い無彩色または有彩色で構成されている請求項1、2、3、4、5、6、7、8または9に記載のダイヤモンド等の宝石の観察または撮影用器具。

【請求項11】 クレーム3または4の器具を用いたダイヤモンドまたはダイヤモンド付き宝飾品の撮影方法であって、本体1aの下端部の中央部に、ダイヤモンドのクラウンの下縁部dが本体1aの下縁部102の高さと略一致するような状態にダイヤモンドを位置させ、観察用開孔6または筒体101の上方からダイヤモンドまたはダイヤモンド付き宝飾品を撮影することを特徴とするダイヤモンドまたはダイヤモンド付き宝飾品の撮影方法。

【請求項12】 内部が中空である半球状またはドーム状若しくは錐状の本体1bと、中央部に照度計および宝石載置台を選択的に装着することができる装着部10を有し、前記本体1bを支持する基台部2と、輝度センサ部110が前記装着部10の真上に位置するようにして本体1bの上端に設けられる輝度計11と、前記装着部10に脱着可能に装着され、該装着状態において照度センサ部120が基台部2の上面近傍に位置する照度計12と、前記装着部10に脱着可能に装着され、該装着状態において宝石載置部130が基台部2の上面近傍に位置する宝石載置台13とを有し、前記本体1bは光を透過させる材料で構成されるとともに、本体1bの上端部分3は本体1bの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と装着状態にある宝石載置台の宝石載置部130の中心とを結ぶ直線Xが本体1bの軸線Aに対し $10^\circ \sim 25^\circ$ の角度 $\alpha$ を有するよう構成され、さらに、少なくとも前記輝度計11の測定視野の範囲内にある宝石載置台13の上面および基台部2の上面が黒色に構成されたダイヤモンド等の宝石の輝度測定用器具。

【請求項13】 内部が中空である半球状またはドーム状若しくは錐状の部材100および該部材100の上端に設けられた開口部9に立設された筒体101からなる本体1bと、中央部に照度計および宝石載置台を選択的に装着することができる装着部10を有し、前記本体1bを支持する基台部2と、輝度センサ部110が前記装着部10の真上に位置するようにして筒体101に設けられる輝度計11と、前記装着部10に脱着可能に装着され、該装着状態において照度センサ部120が基台部

2の上面近傍に位置する照度計12と、前記装着部10に脱着可能に装着され、該装着状態において宝石載置部130が基台部2の上面近傍に位置する宝石載置台13とを有し、前記本体1bは光を透過させる材料で構成されるとともに、筒体101を含む本体1bの上端部分3は本体1bの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と装着状態にある宝石載置台の宝石載置部130の中心とを結ぶ直線Xが本体1bの軸線Aに対し10°～25°の角度αを有するよう構成され、さらに、少なくとも前記輝度計11の測定視野の範囲内にある宝石載置台13の上面および基台部2の上面が黒色に構成されたダイヤモンド等の宝石の輝度測定用器具。

【請求項14】 上端部分3が筒体101とその周囲の部材100の部分から構成されている請求項13に記載のダイヤモンド等の宝石の輝度測定用器具。

【請求項15】 上端部分3が筒体101のみから構成されている請求項13に記載のダイヤモンド等の宝石の輝度測定用器具。

【請求項16】 上端部分3が筒体101の上部側の部分から構成されている請求項13に記載のダイヤモンド等の宝石の輝度測定用器具。

【請求項17】 本体1bの上端部分3が白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、本体1bの残余部分4が、これよりも明度の低い無彩色または有彩色で構成されている請求項12、13、14、15または16に記載のダイヤモンド等の宝石の輝度測定用器具。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は、ダイヤモンド等の宝石を観察または撮影するための器具およびこの器具を用いた宝石の撮影方法、さらにダイヤモンド等の宝石の輝度を測定するため器具に関する。

【0002】

【従来の技術】 宝石としてダイヤモンドが好まれる理由の一つは、その独特の輝きにある。このダイヤモンド特有の輝きは、ダイヤモンドに入射した光がそのカット面で内部反射し、ダイヤモンドのクラウン側に戻ってくることにより生じる。したがって、ダイヤモンドの輝きの度合いは、そのカットおよびプロポーションの善し悪しによる影響が極めて大きい。輝きを求める理想的なブリリアントカットのダイヤモンドは、せい肉を落したプロポーションを有し、各カット面はそれぞれ正しい方向を向いている。このため、ダイヤモンドに入射した大部分の光がカット面で規則正しく内部反射し、クラウン側に集められるため、最も大きな輝きを示す。

【0003】 これに対し、キャラット(石の大きさ)のみを追及したカットの粗雑なダイヤモンドは、余分なせい肉を残したプロポーションを有し、各カット面はバラ

バラの方向を向いている。このため、ダイヤモンドに入射した光は規則正しい内部反射ができず、クラウン側に集められる光の量も少なく、輝きも少ない。また、特に悪いカットの場合、入射した光がそのままバビリオン(裏面)側に抜けてしまうものもある。通常、一般の需要者は店頭において肉眼でダイヤモンドを観察するが、照明等の影響でカットの良いダイヤモンドでもカットの悪いダイヤモンドでも殆ど同じような輝きに見える。したがって、カットの善し悪しを見分けることは専門的知識を持たない者には非常に困難である。このため、従来の一般的な傾向としては、上記のように判定しづらいカットやプロポーションの善し悪しよりも、直接に価格に反映できるキャラットに主体を置いた製造、販売がなされているのが実情である。

【0004】 ダイヤモンドの輝きを観察するための簡易な器具として、実開昭60-109041号が提案されている。この器具は、拡大鏡と光源との間にダイヤモンドを置き、拡大鏡の対物レンズ側に取付けた、中央に孔を有する赤色円板に光源からの光を当て、その光がダイヤモンドに反射するようにしたものであり、この器具によれば、赤い光が多く見えるダイヤモンドが輝きの良いものとされる。しかし、上記の器具は、光源を必要とするため電源のある場所でしか使用できず、また持ち運びも不便である。加えて、この器具により観察されるダイヤモンドの紋様は、白色と一種類の赤色だけで構成(輝く部分が赤色、輝かない部分が白色)される極めて単調なものである。したがって、輝きの判定に必要な光の強弱に基づく紋様の濃淡等は全く見られず、また立体感も全くないものであった。このため、ダイヤモンドの輝きを十分明瞭に判定し得るものではなかった。

【0005】 また、ダイヤモンドの鑑定書などに使われている写真は、ダイヤモンドに下方から照明を当て、上部からカメラで撮影したものであり、これによって写し出される紋様は、人間が肉眼で見て最も輝く部分と最も輝かない部分が黒く、その他の部分は白っぽい色となる。このような写真は下記①～③のような欠点を有しており、このため専門家であればまだしも、素人には非常に判りにくいものであった。

① あたかも白黒写真のネガフィルムのように、最も輝いて見えるはずの部分が黒く写る。

② 最も輝いている部分と最も輝いていない部分が同じ黒色に写るため、どの部分が真に輝いているのかが全く判別できない。

③ 白色に写る部分には、本来輝きの大きい部分と輝きの小さい部分、すなわち輝きの強弱があるはずである。しかし、上記写真では、そのような輝きの違いに基づく濃淡の変化がほとんど見られず、白色部分での輝き度の差が全く判別できない。またこのため、紋様自体の立体感が全くない。

【0006】 このような問題を解決する器具として、本

発明者は先に、特開平2-290542号としてダイヤモンドの輝きの度合いを素人でも簡単に判定することができる器具を提案した。この器具は、光を透過させない材質からなる有底の下筒部と、その上部に設けられる半透明材からなる上筒部とからなり、下筒部をその内底部中心と上縁部とを結ぶ線が下筒部軸線に対して10~25°の角度を有するよう構成し、且つ、ダイヤモンドを載置すべき内底部の表面を光を反射しない黒色系の色とした器具である。この器具によればダイヤモンドからの反射光に応じた極めて特徴的な紋様を観察することができる。ダイヤモンドの輝きの度合い・良否を素人でも簡単に判定することができる。また、この器具によって撮影されたダイヤモンドの写真は、ダイヤモンドのカットの良否に基づく輝きを極めて高精度に捉え、したがって、ダイヤモンドの鑑定専用の写真として極めて好適なものであった。

## 【0007】

【発明が解決しようとする課題】本発明は、特開平2-290542号の器具をさらに改良し、ダイヤモンドのカットの良否に応じた紋様をより鮮明に捉えることができる器具を提供しようとするものである。

【0008】また、上記器具で指輪やネックレス等の宝飾品に取り付けられたダイヤモンドを観察する場合、上述のようにダイヤモンド自体の特徴的な紋様は観察することができる。しかし、一般にダイヤモンドの付いた指輪やネックレス等の宝飾品を購入する者は、単にダイヤモンドの品質だけでなく、ダイヤモンドと貴金属（ゴールドやプラチナ等）や他の石とのデザイン上、色彩上のマッチング、ダイヤモンドを含めた宝飾品全体のデザインや色合い等によって商品を選択するのが通常である。この点、上述した従来の器具では、ダイヤモンドが載置される内底部の表面が光を反射しない黒色系の色に構成されているため、ダイヤモンドが取り付けられている貴金属部分やダイヤモンドの周囲にちりばめられている所謂色石（例えば、サファイアやルビー）等については、ダイヤモンドの極く周辺部分のものですから殆ど観察（あるいは撮影）できないという欠点があった。したがって、本発明の第二の目的は、ダイヤモンド特有の特徴的な紋様だけでなく、ダイヤモンドが取り付けられている貴金属部分やダイヤモンドの周囲にちりばめられている他の宝石類も同時に観察することができる器具、さらにはこのような器具を用いた宝石の撮影を提供することにある。

【0009】さらに、ダイヤモンドの輝きを定量的に測定できる器具として、本発明者は先に特開平4-194731号を提案したが、本発明の他の目的は特開平4-194731号の器具に較べより精度良くダイヤモンドの輝度を測定することができる器具を提供することにある。

## 【0010】

【課題を解決するための手段】本発明者らは、上記特開平2-290542号に示されるようなダイヤモンドの紋様をより鮮明に捉えることができる器具の構造を検討した結果、以下のような知見を得た。

【0011】① ダイヤモンドを入れる器具本体を半球状またはドーム状若しくは錐状に構成し、且つ、この器具本体の全体を光を透過させる材料で構成するとともに、器具本体の上端部分が残余部分（上端部分よりも下方部分）よりも光の透過率が大きくなるよう構成し、且つ上端部分を通じて器具本体の中心（ダイヤモンドの載置部）に入射する光の角度範囲を特定の範囲とすることにより、ダイヤモンドのカットの良否に応じた紋様が、従来の器具に較べてより鮮明に捉えられる。

【0012】② また、上記の半球状またはドーム状若しくは錐状の器具本体を下端が開放した構造とし、この器具の下端にダイヤモンド付きの宝飾品を所定の状態で位置させることにより、上記と同様にダイヤモンドの特徴的な紋様が観察できるだけでなく、ダイヤモンドが取り付けられている貴金属部分やダイヤモンドの周囲にちりばめられている他の宝石類を自然色のまま極めて明瞭に観察できる。

③ さらに、上記①の構造をダイヤモンドの輝度測定用器具に応用することにより、従来の器具に較べダイヤモンドの輝度のより正確な測定が可能となる。

【0013】本発明はこのような知見に基づきなされたもので、その構成は以下の通りである。

(1) 内部が中空である半球状またはドーム状若しくは錐状の本体1aと、中央に宝石の載置部7を有し、前記本体1aを支持する基台部2とを有し、前記本体1aは光を透過させる材料で構成されるとともに、本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と載置部7の中心とを結ぶ直線Xが本体1aの軸線Aに対し10°~25°の角度αを有するよう構成され、さらに上端部分3の中心に観察用開孔6が形成されたダイヤモンド等の宝石の観察または撮影用器具。

【0014】(2) 内部が中空である半球状またはドーム状若しくは錐状の部材100および該部材100の上端に設けられた開口部9に立設された筒体101からなる本体1aと、中央に宝石の載置部7を有し、前記本体1aを支持する基台部2とを有し、前記本体1aは光を透過させる材料で構成されるとともに、筒体101を含む本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と載置部7の中心とを結ぶ直線Xが本体1aの軸線Aに対し10°~25°の角度αを有するよう構成されたダイヤモンド等の宝石の観察または撮影用器具。

【0015】(3) 内部が中空で且つ下端が開放した半球状またはドーム状若しくは錐状の本体1aを有し、

前記本体1aは光を透過させる材料で構成されるとともに、本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と本体1aの下端中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^{\circ} \sim 25^{\circ}$ の角度を有するよう構成され、さらに上端部分3の中心に観察用開孔6が形成されたダイヤモンド等の宝石の観察または撮影用器具。

【0016】(4) 内部が中空で且つ下端が開放した半球状またはドーム状若しくは錐状の部材100および該部材100の上端に設けられた開口部9に立設された筒体101からなる本体1aを有し、該本体1aは光を透過させる材料で構成されるとともに、筒体101を含む本体1aの上端部分3は本体1aの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と本体1aの下端中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^{\circ} \sim 25^{\circ}$ の角度を有するよう構成されたダイヤモンド等の宝石の観察または撮影用器具。

【0017】(5) 上記(2)または(4)の器具において、上端部分3が筒体101とその周囲の部材100の部分から構成されているダイヤモンド等の宝石の観察または撮影用器具。

(6) 上記(2)または(4)の器具において、上端部分3が筒体101のみから構成されているダイヤモンド等の宝石の観察または撮影用器具。

(7) 上記(2)または(4)の器具において、上端部分3が筒体101の上部側の部分から構成されているダイヤモンド等の宝石の観察または撮影用器具。

【0018】(8) 上記(1)、(2)、(3)、(4)、(5)、(6)または(7)の器具において、観察用開孔6または筒体101に拡大レンズ8を有するダイヤモンド等の宝石の観察または撮影用器具。

(9) 上記(1)、(2)、(3)、(4)、(5)、(6)、(7)または(8)の器具において、本体1aの上端部分3が白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、本体1aの残余部分4が、これよりも明度の低い無彩色または有彩色で構成されているダイヤモンド等の宝石の観察または撮影用器具。

【0019】(10) 上記(3)または(4)の器具を用いたダイヤモンドまたはダイヤモンド付き宝飾品の撮影方法であって、本体1aの下端部の中央部に、ダイヤモンドのクラウンの下縁部dが本体1aの下縁部102の高さと略一致するような状態にダイヤモンドを位置させ、観察用開孔6または筒体101の上方からダイヤモンドまたはダイヤモンド付き宝飾品を撮影することを特徴とするダイヤモンドまたはダイヤモンド付き宝飾品の撮影方法。

【0020】(11) 内部が中空である半球状またはドーム状若しくは錐状の本体1bと、中央部に照度計およ

び宝石載置台を選択的に装着することができる装着部10を有し、前記本体1bを支持する基台部2と、輝度センサ部110が前記装着部10の真上に位置するようにして本体1bの上端に設けられる輝度計11と、前記装着部10に脱着可能に装着され、該装着状態において照度センサ部120が基台部2の上面近傍に位置する照度計12と、前記装着部10に脱着可能に装着され、該装着状態において宝石載置部130が基台部2の上面近傍に位置する宝石載置台13とを有し、前記本体1bは光を透過させる材料で構成されるとともに、本体1bの上端部分3は本体1bの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と装着状態にある宝石載置台の宝石載置部130の中心とを結ぶ直線Xが本体1bの軸線Aに対し $10^{\circ} \sim 25^{\circ}$ の角度 $\alpha$ を有するよう構成され、さらに、少なくとも前記輝度計11の測定視野の範囲内にある宝石載置台13の上面および基台部2の上面が黒色に構成されたダイヤモンド等の宝石の輝度測定用器具。

【0021】(12) 内部が中空である半球状またはドーム状若しくは錐状の部材100および該部材100の上端に設けられた開口部9に立設された筒体101からなる本体1bと、中央部に照度計および宝石載置台を選択的に装着することができる装着部10を有し、前記本体1bを支持する基台部2と、輝度センサ部110が前記装着部10の真上に位置するようにして筒体101に設けられる輝度計11と、前記装着部10に脱着可能に装着され、該装着状態において照度センサ部120が基台部2の上面近傍に位置する照度計12と、前記装着部10に脱着可能に装着され、該装着状態において宝石載置部130が基台部2の上面近傍に位置する宝石載置台13とを有し、前記本体1bは光を透過させる材料で構成されるとともに、筒体101を含む本体1bの上端部分3は本体1bの残余部分4よりも光の透過率が大きく構成され、且つ該上端部分3は、その外縁5と装着状態にある宝石載置台の宝石載置部130の中心とを結ぶ直線Xが本体1bの軸線Aに対し $10^{\circ} \sim 25^{\circ}$ の角度 $\alpha$ を有するよう構成され、さらに、少なくとも前記輝度計11の測定視野の範囲内にある宝石載置台13の上面および基台部2の上面が黒色に構成されたダイヤモンド等の宝石の輝度測定用器具。

【0022】(13) 上記(12)の器具において、上端部分3が筒体101とその周囲の部材100の部分から構成されているダイヤモンド等の宝石の輝度測定用器具。

(14) 上記(12)の器具において、上端部分3が筒体101のみから構成されているダイヤモンド等の宝石の輝度測定用器具。

(15) 上記(12)の器具において、上端部分3が筒体101の上部側の部分から構成されているダイヤモンド等の宝石の輝度測定用器具。

(16) 上記(11)、(12)、(13)、(14)または(15)の器具

において、本体1bの上端部分3が白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、本体1bの残余部分4が、これよりも明度の低い無彩色または有彩色で構成されているダイヤモンド等の宝石の輝度測定用器具。

【0023】

【作用】本発明の観察または撮影用器具において、上記特開平2-290542号に較べてダイヤモンドの紋様をより鮮明に捉えることができる原因是、ダイヤモンドの上方20°～50°(つまり、上端部分3)の範囲から本体1aの内部に比較的明るい光が取り込まれるとともに、その以外の部分(つまり、残余部分4)からも本体1aの内部に適度な光が取り込まれること、さらに、半球状またはドーム状若しくは錐状の本体1aの内面の各部分とダイヤモンドとの距離が均等化されるため、ダイヤモンドに種々の方向から入射する光の量が均一化するためであると考えられる。

【0024】基台部2を有する器具を用いてダイヤモンドを観察または撮影する場合、基台部2の中央に形成された載置部7にダイヤモンドD(裸石または宝飾品に取り付けられたダイヤモンド)を置き、観察用開孔6または筒体101の上端の開口から本体1aの内部のダイヤモンドを観察または撮影する。また、本体1aの下端が開放した器具を用いてダイヤモンド付きの宝飾品を観察または撮影する場合、本体1aの下端部の中央部に、ダイヤモンドのクラウンの下縁部dが本体1aの下縁部102の高さと略一致するような状態に宝飾品Rを位置させ、観察用開孔6または筒体101の上端の開口から宝飾品Rを観察または撮影する。

【0025】上記のいずれの器具においても、本体1a内にはその全体から光が入射するが、特に光の透過率が高い上端部分3からの光の入射量が多い。したがって、載置部7または本体1aの下端中央に置かれたダイヤモンドからみると、上方20°～50°の範囲(上端部分3)から多くの光が入射し、残余部分4からはこれよりも少ない光が入射することになる。

【0026】ダイヤモンドに入射した光は、内部反射によりクラウン方向に戻され、またダイヤモンドのカットの善し悪しによって一部がパビリオン側に透過する。そして、内部反射によりクラウン方向に集められた光が観察者またはカメラレンズに届く。この観察では、ダイヤモンドの各カット面からの上記反射光の強弱に応じて、特徴的な紋様が現われる。すなわち、最も反射光エネルギーの強い部分は、上方20°～50°の上端部分3から入射する光だけを反射して白っぽく見える。また、その他の部分は、上端部分3から入射した光と残余部分4から入射した光とが種々の割合で混ざり合い、明るい色から暗い色まで何段階かに変化した色に見える。また、光が殆ど或いは全く反射せずパビリオン側に透過してしまう部分は黒ずんで見える。したがって、カットが良く

理想的なブリリアントカットのダイヤモンドは、ほとんど全てのカット面で内部反射を生じているため、ダイヤモンド自体の輪郭が極めて明瞭(ラウンドの輪郭が明瞭に現われる)であり、しかも全体として白色部分および明るい色の部分の割合が非常に多い。また、理想的なプロポーションを有するブリリアントカットのダイヤモンドは、その中心から8方向に放射状に延びる白色の「矢」が極めて明瞭に認められる。これに対し、カットが粗雑でプロポーションが良くないダイヤモンドでは、10 全体の反射エネルギーが弱いため、全体的に白色部分の割合が少なく、暗い色の割合が多くなる。また、特にカットの悪いダイヤモンドでは、周縁部が凹凸状に黒ずんで欠けて見える。このように見えるのは、光が内部反射することなく、そのままパビリオン側に透過するためである。したがってこの部分は全く輝かない部分である。また、このようなダイヤモンドは、全体的に紋様に規則性がなく、上述したような「矢」も全く現れていない。

【0027】本発明の器具によりダイヤモンドの反射光に基づく紋様が観察できる基本的な原理は、特開平2-290542号の器具と同様であると考えられるが、本発明の器具では、その本体1aの特有の構成によって特開平2-290542号の器具に較べより鮮明な紋様を観察できる。また、本体1aの下端が開放した器具を用い、ダイヤモンドのクラウンの下縁部dが本体1aの下縁部102の高さと略一致するような状態に宝飾品Rを位置させて観察(または撮影)した場合には、ダイヤモンドについては上述したような紋様を観察することができるとともに、その周囲の貴金属部分や他の宝石類については全くの自然色で観察(または撮影)できる。この理由は必ずしも明らかではない。

【0028】本体1aの下部に基台部2を有する器具の場合には、上端部分3の外縁5と載置部7の中心とを結ぶ直線Xと本体1aの軸線Aとがなす角度αは10°～25°に限定される。また、本体1aの下端が開放した器具の場合には、上端部分3の外縁5と本体1aの下端中心とを結ぶ直線Xと本体1aの軸の軸線Aとがなす角度αは10°～25°に限定される。これらの角度αが10°～25°の範囲を外れると上記した紋様が見えにくくなる。すなわち、上記角度が10°未満であると、40 ダイヤモンドが全体に黒ずんで見え、良いカットのダイヤモンドでもその紋様を十分明瞭に捉えることができない。一方、上記角度が25°を超えると、逆にダイヤモンドが全体に輝いて見え、この場合も紋様を十分明瞭に捉えることができない。これは、上記角度αが大き過ぎるとダイヤモンドに直接当る光の量が多過ぎ、一方、角度が小さ過ぎると逆に光の量が少な過ぎるため、いずれの場合も微妙な光量を必要とする上記紋様の発現には到らないものと考えられる。

【0029】したがって、本発明の器具ではその構造の50 紹介、大きさ等にかかわりなく、角度αを10°～25

、好ましくは $15 \pm 3^\circ$ とする。そして、本発明の器具はこのような条件を満足する限り、その大きさ等に限らず、例えば器具全体を観察することができる。本発明の器具では、上端部分3および残余部分4の色等特に制約はないが、上端部分3については、本体1aの内部に積極的に光を取り入れるという観点から、白色、乳白色、高明度の有彩色の中から選ばれる1種以上の高明度の色することが好ましい。

【0030】一方、残余部分4は上端部分3に較べ光を透過せにくければよく、その色に特に制約はないが、この残余部分4の色によって観察されるダイヤモンドの紋様の色が異なってくる。例えば、残余部分4の色が無彩色である場合には、観察されるダイヤモンドの紋様の色はグレーが基調となる。また、残余部分4の色が有彩色の場合には、ダイヤモンドの紋様の色はそれぞれの有彩色が基調となる。したがって、色彩的に美麗な紋様を観察したい場合には、残余部分4の色を比較的明るい有彩色、例えば、赤、青、緑、黄、オレンジ、ピンクあるいはこれらの類似色、蛍光色等とすればよい。また、残余部分4の上下方向または周方向を2つ以上の異なる色で構成することもできる。このように残余部分4を有彩色とすることにより、この部分に入射する光が残余部分4の内面の色を明るくし、この内面の色をあたかも蛍光色のような色にし、観察されるダイヤモンドの紋様より鮮やかなものとする。

【0031】また、本体1aは光を適度に透過させるものであればその材質に制約はない、例えば半透明のプラスチック材やガラス材等により構成することができ、また、比較的薄手の紙も光を適度に透過するため、このような紙で構成することもできる。また、本発明の器具において、本体1aが半球状またはドーム状若しくは錐状の部材100とその上端に立設された筒体101とからなる場合には、上述したと同時の作用が得られるが、特に上端部分3からの本体1a内部への光の取り込みが観察者の顔や撮影用のカメラ等により妨げられる度合いが少いという利点がある。

【0032】また、本発明の器具は観察用開孔6または筒体101に拡大レンズ8を取付けた構造とすることにより、拡大されたダイヤモンドの紋様を観察することができるため、非常に見易く、紋様の判定もし易いという利点がある。また、本発明の器具によりダイヤモンドを観察若しくは撮影する場合、必ずしも特別な照明は必要でないが、使用する場所の明るさによっては、本体1aの周りから光を積極的に照射するのが好ましい場合もある。

【0033】次に、本発明の輝度測定用器具によりダイヤモンドの輝度を測定するには、明るさの調整が可能な照明装置(図示せず)により本体1bを照らした状態で、まず、照度計12を基台部2の装着部10に装着し、照度計12により本体1bの内部の照度を測定し、

照度計12の指針が規定の照度となるよう、照明装置の明るさを調整する。次いで、照度計12を装着部10から取外した後、この装着部10に宝石載置台13(この時点では、宝石載置部130にはダイヤモンドは置かれていらない)を装着し、輝度計11の測定値を読み取る。

10 輝度計11の測定視野にある宝石載置台13および基台部2の上面は黒色に構成されているが、輝度計11はそれら上面からの雑光を検知し、輝度計11の指針が僅かな数値を示す。ここで、この指針をゼロ調整ツマミによりゼロに合わせる。宝石載置台13を装着部10から取外し、宝石載置台13にダイヤモンドDを水平に載せた後再び装着部10に取付け、輝度計11による測定値を読み取る。この測定値がダイヤモンドDの真の輝度である。

#### 【0034】

【実施例】以下、本発明の観察または撮影用器具の実施例について説明する。なお、以下の実施例の説明はダイヤモンドの観察を例に述べる。図1及び図2は本発明の一実施例を示すもので、1aは内部が中空である半球状の本体、2はこの本体1aを支持する基台部2である。

20 【0035】前記本体1aは光を透過させる材料で構成されているが、本体1aの円盤状の上端部分3とその下方の残余部分4は光の透過率が異なっており、上端部分3のほうが残余部分4よりも光の透過率が大きい。例えば、上端部分3は白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、残余部分4は、これよりも明度の低い無彩色または有彩色で構成される。前記上端部分3は、その外縁5と下記する載置部7の中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^\circ \sim 25^\circ$ の角度 $\alpha$ を有するよう構成され、この上端部分3の中心には観察用開孔6が形成されている。

【0036】前記基台部2はその中央に宝石の載置部7を有している。この載置部7は、図に示すような裸石が観察の対象となる場合には単なる凹部により構成してもよいが、例えば、指輪に取り付けられたダイヤモンドが観察の対象となる場合には、指輪のリング部を差しめるような溝等により構成してもよく、その構成は任意である。要は、観察しようとするダイヤモンドが正しい姿勢(つまり、ダイヤモンドの軸線が本体1aの軸線Aと略一致するような姿勢)で載置できるような構成であればよい。また、ダイヤモンドの紋様を鮮明に観察若しくは撮影するため、基台部2の上面のうち少なくとも、観察用開孔6から覗いた際に観察者または撮影用器具(カメラ等)の視野に入る上面部分は、黒色または黒色系の色とすることが好ましい。

40 【0037】図3は本発明の他の実施例を示すもので、観察用開孔6に拡大レンズ8を設けたものである。この拡大レンズ8としては所謂ペーパーレンズを用いることができる。なお、その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明

は省略する。

【0038】図4及び図5は本発明の他の実施例を示すもので、本体1aを、内部が中空の半球状の部材100と、この部材100の上端に設けられた開口部9に立設された筒体101から構成したものである。前記本体1aは全体が光を透過させる材料で構成されているが、筒体101を含む本体1aの上端部分3と残余部分4は光の透過率が異なり、上端部分3のほうが残余部分4よりも光の透過率が大きい。例えば、上端部分3は白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、残余部分4は、これよりも明度の低い無彩色または有彩色で構成される。

【0039】前記上端部分3は、筒体101とその周囲の部材100の部分（円盤状の部分）から構成されており、その外縁5と載置部7の中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^\circ \sim 25^\circ$ の角度 $\alpha$ を有するよう構成されている。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。

【0040】図6及び図7は本発明の他の実施例を示すもので、図4及び図5の実施例では上端部分3を筒体101とその周囲の部材100の部分から構成したのに対し、この実施例では上端部分3を筒体101のみから構成したものである。したがって、この実施例では上端部分3の外縁5は筒体101の下端に形成されることになる。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。

【0041】図8及び図9は本発明の他の実施例を示すもので、図6及び図7の実施例では上端部分3を筒体101の全部により構成したのに対し、この実施例では上端部分3を筒体101の上部側の部分から構成したものである。したがって、この実施例では上端部分3の外縁5は筒体101の途中に形成されることになる。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。以上述べた図4～図9の実施例においては、図中鎖線で示すように筒体101に拡大レンズ8を設けることができる。

【0042】図10及び図11は、器具が、内部が中空で且つ下端が開放した半球状の本体1aのみから構成される場合の一実施例を示している。前記本体1aは全体が光を透過させる材料で構成されているが、本体1aの上端部分3と残余部分4は光の透過率が異なり、上端部分3のほうが残余部分4よりも光の透過率が大きい。例えば、上端部分3は白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、残余部分4は、これよりも明度の低い無彩色または有彩色で構成される。

【0043】前記上端部分3は、その外縁5と本体1aの下端中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^\circ \sim 25^\circ$ の角度を有するよう構成され、上端部分3

の中心には観察用開孔6が形成されている。また、本実施例においても、図3の実施例と同様に観察用開孔6に拡大レンズ8を設けてもよい。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。

【0044】図12及び図13は本発明の他の実施例を示すもので、下端が開放した本体1aを、内部が中空の半球状の部材100と、この部材100の上端に設けられた開口部9に立設された筒体101から構成したものである。前記本体1aは全体が光を透過させる材料で構成されているが、筒体101を含む本体1aの上端部分3と残余部分4は光の透過率が異なり、上端部分3のほうが残余部分4よりも光の透過率が大きい。例えば、上端部分3は白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、残余部分4は、これよりも明度の低い無彩色または有彩色で構成される。

【0045】前記上端部分3は、筒体101とその周囲の部材100の部分（円盤状の部分）から構成されており、その外縁5と本体1aの下端中心とを結ぶ直線Xが本体1aの軸線Aに対し $10^\circ \sim 25^\circ$ の角度 $\alpha$ を有するよう構成されている。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。

【0046】図14及び図15は本発明の他の実施例を示すもので、図12及び図13の実施例では上端部分3を筒体101とその周囲の部材100の部分から構成したのに対し、この実施例では上端部分3を筒体101のみから構成したものである。したがって、この実施例では上端部分3の外縁5は筒体101の下端に形成されることになる。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。

【0047】図16及び図17は本発明の他の実施例を示すもので、図14及び図15の実施例では上端部分3を筒体101の全部により構成したのに対し、この実施例では上端部分3を筒体101の上部側の部分から構成したものである。したがって、この実施例では上端部分3の外縁5は筒体101の途中に形成されることになる。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。以上述べた図12～図17の実施例においては、図4～図9に示す実施例と同様に筒体101に拡大レンズ8を設けることができる。

【0048】以上のような本発明の観察または撮影器具のうち、基台部2を有する器具（図1～図9）を用いてダイヤモンドを観察または撮影する場合、基台部2の中央に形成された載置部7にダイヤモンドD（裸石または宝飾品に取り付けられたダイヤモンド）を置き、観察用開孔6または筒体101の上端の開口から本体1aの内

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部のダイヤモンドを観察または撮影する。

【0049】また、本体1aの下端が開放した器具(図10～図17)を用いてダイヤモンド付きの宝飾品を観察ないしは撮影する場合、本体1aの下端部の中央部に、ダイヤモンドのクラウンの下縁部dが本体1aの下縁部102の高さと略一致するような状態にダイヤモンド付きの宝飾品Rを位置させ、観察用開孔6または筒体101の上端の開口から宝飾品Rを観察または撮影する。この場合、宝飾品Rに自然光或いは室内光が側方から十分に当る場合には特に必要はないが、そうでない場合には、図に示すように宝飾品Rの側方からライト光或いは反射板(鏡等)を利用して自然光を当て、ダイヤモンドDの周囲の貴金属部分や他の宝石類が見え易いようになる。また、いずれの器具を使用する場合にも、観察または撮影する場所の明るさに応じて、必要であれば本体1aにその側方からライト光或いは反射板(鏡等)を利用して自然光を当て、本体1a内に積極的に光を取り込むようにする。

【0050】次に、本発明の輝度測定用器具の実施例について説明する。図18及び図19は本発明の一実施例を示すもので、器具は内部が中空である半球状の本体1bと、本体1bを支持する基台部2と、本体1bの上端に設けられる輝度計11と、基台部2に脱着可能に取り付けられる照度計12(図18)及び宝石載置台13(図19)とを有している。

【0051】前記本体1bは、内部が中空の半球状の部材100と、この部材100の上端に設けられた開口部9に立設された筒体101から構成されている。この本体1bは全体が光を透過させる材料で構成されているが、本体1bの筒体101を含めた上端部分3と残余部分4は光の透過率が異なり、上端部分3のほうが残余部分4よりも光の透過率が大きい。例えば、上端部分3は白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、残余部分4は、これよりも明度の低い無彩色または有彩色で構成される。

【0052】前記上端部分3は筒体101とその周囲の部材100の部分(円盤状の部分)から構成されている。上端部分3は、その外縁5と装着状態にある宝石載置台の宝石載置部130の中心とを結ぶ直線Xが本体1bの軸線Aに対し10°～25°の角度αを有するよう構成されている。前記基台部2の中央には、照度計12および宝石載置台13を選択的に装着することができる装着部10が設けられている。本実施例では、装着部10は照度計および宝石載置台がネジ式で螺装される装着孔により構成されている。前記輝度計11は、その輝度センサ部110が前記装着部10の真上に位置するようにして本体1bの上端(筒体101の上端)に設けられている。また、輝度センサ部110に周囲からの雑光が入らないようにするために、輝度センサ部110は遮光筒により外側されている。

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【0053】前記装着部10は前記装着部10に脱着可能に装着され、該装着状態において照度センサ部120が基台部2の上面近傍に位置するよう構成されている。また、前記宝石載置台13も前記装着部10に脱着可能に装着され、該装着状態において宝石載置部130が基台部2の上面近傍に位置するよう構成されている。また、前記輝度計11の測定視野の範囲内にある宝石載置台13の上面および基台部2の上面は黒色に構成されている。なお、このような黒色面とするために反射の少ない黒色の布等を貼着することもできるその他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。

【0054】図20は本発明の他の実施例を示すもので、本体1bを半球状の部材だけで構成したものである。前記本体1bは光を透過させる材料で構成されているが、本体1bの上端部分3と残余部分4は光の透過率が異なり、上端部分3のほうが残余部分4よりも光の透過率が大きい。例えば、上端部分3は白色、乳白色および高明度の有彩色の中から選ばれる1種以上の高明度の色で構成され、残余部分4は、これよりも明度の低い無彩色または有彩色で構成される。前記上端部分3は、その外縁5と装着状態にある宝石載置台の宝石載置部130の中心とを結ぶ直線Xが本体1bの軸線Aに対し10°～25°の角度αを有するよう構成されている。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。

【0055】図21は本発明の他の実施例を示すもので、図18及び図19の実施例では上端部分3を筒体101とその周囲の部材100の部分(円盤状の部分)から構成したのに対し、この実施例では上端部分3を筒体101のみから構成したものである。したがって、この実施例では上端部分3の外縁5は筒体101の下端に形成されることになる。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。図22は本発明の他の実施例を示すもので、図21の実施例では上端部分3を筒体101の全部により構成したのに対し、この実施例では上端部分3を筒体101の上部側の部分から構成したものである。したがって、この実施例では上端部分3の外縁5は筒体101の途中に形成されることになる。その他の構成については先に述べた実施例と同様であるので、同一の符号を付し、詳細な説明は省略する。

【0056】なお、上記の実施例では装着部10に対して照度計12および宝石載置台13がネジ式で装着されるようになっているが、装着方式はこれに限定されるものではなく、例えば、本体1bを基台部2から取り外した状態で、装着部10に照度計12および宝石載置台13を脱着可能に嵌め込む方式等、任意の構造を探り得る。また、本実施例では、輝度計11を取り外し可能に構成し、輝度計11を取り外すことにより器具宝石の観

察または撮影用として使用することができるようとしている。

【0057】以上のような本発明の輝度測定用器具によりダイヤモンドの輝度を測定するには、明るさの調整が可能な照明装置(図示せず)により本体1bを照らした状態で、まず、照度計12を基台部2の装着部10に装着し、照度計12により本体1bの内部の照度を測定し、照度計12の指針が規定の照度となるよう、照明装置の明るさを調整する。次いで、照度計12を装着部10から取外した後、この装着部10に宝石載置台13(この時点では、宝石載置部130にはダイヤモンドは置かれていらない)を装着し、輝度計11の測定値を読み取る。輝度計11の測定視野にある宝石載置台13および基台部2の上面は黒色に構成されているが、輝度計11はそれら上面からの雑光を検知し、輝度計11の指針が僅かな数値を示す。ここで、この指針をゼロ調整ツマミによりゼロに合わせる。宝石載置台13を装着部10から取外し、宝石載置台13にダイヤモンドDを水平に載せ、再度装着部10に取付け、輝度計11による測定値を読み取る。この測定値がダイヤモンドDの真の輝度である。

【0058】このような輝度の測定によれば、例えばキャラット数の小さいダイヤモンドでもカットが優れたものは、よりキャラット数が大きいがカットの悪い石に較べ、大きな輝度測定値が得られる場合がある。したがって、例えば、各キャラット毎に最も大きな輝きを有するダイヤモンドの輝度を基準とした輝度指数(例えば、各キャラット毎に最も大きな輝きを示すダイヤモンドの輝度を100とする)を定めておけば、キャラット数に対応したダイヤモンドの輝き度を客観的に知ることができ、ダイヤモンドのカットや品質の善し悪しを容易に判定することができる。

【0059】以上述べた本発明の観察または撮影用器具及び輝度測定用器具において、本体1a、1bの形状は、本体1a、1bの内面とダイヤモンドとの距離が略等しいという点から半球状が最も好ましいが、それ以外に、ドーム状(半球状よりも扁平なドーム状或いは半球状よりも縦長のドーム状)または錐状(円錐状、角錐状等)とすることもできる。図23～図26は本体1a、1bの形状例を示すもので、図23及び図24は錐状の本体1a、1b、図25及び図26はドーム状の本体1a、1bの場合をそれぞれ示している。

【0060】

【発明の効果】以上述べた本発明の観察または撮影用器具によれば、従来の器具に較べダイヤモンドのカットの良否に応じた紋様をより鮮明に捉えることができる。また、本発明の他の器具によれば、上記のようなダイヤモンドの紋様を捉えることができるとともに、ダイヤモンドが取り付けられている貴金属部分やダイヤモンドの周囲にちりばめられている他の宝石類を自然色で観察する

ことができる。また、本発明の輝度測定用器具によれば、従来の器具に較べより精度良くダイヤモンドの輝度を測定することができる。

【図面の簡単な説明】

【図1】本発明の観察または撮影用器具の一実施例を示す斜視図

【図2】図1に示す器具の縦断面図

【図3】本発明の観察または撮影用器具の他の実施例を示す斜視図

10 【図4】本発明の観察または撮影用器具の他の実施例を示す斜視図

【図5】図4に示す器具の縦断面図

【図6】本発明の観察または撮影用器具の他の実施例を示す斜視図

【図7】図6に示す器具の縦断面図

【図8】本発明の観察または撮影用器具の他の実施例を示す斜視図

【図9】図8に示す器具の縦断面図

20 【図10】本発明の観察または撮影用器具の他の実施例を示す斜視図

【図11】図10に示す器具の縦断面図

【図12】本発明の観察または撮影用器具の他の実施例を示す斜視図

【図13】図12に示す器具の縦断面図

【図14】本発明の観察または撮影用器具の他の実施例を示す斜視図

【図15】図14に示す器具の縦断面図

【図16】本発明の観察または撮影用器具の他の実施例を示す斜視図

30 【図17】図16に示す器具の縦断面図

【図18】本発明の輝度測定用器具の一実施例を、装着部に照度計を装着した状態で示す縦断面図

【図19】図18に示す器具を、装着部に宝石載置台を装着した状態で示す縦断面図

【図20】本発明の輝度測定用器具の他の実施例を、装着部に宝石載置台を装着した状態で示す縦断面図

【図21】本発明の輝度測定用器具の他の実施例を、装着部に宝石載置台を装着した状態で示す縦断面図

【図22】本発明の輝度測定用器具の他の実施例を、装着部に宝石載置台を装着した状態で示す縦断面図

40 【図23】本発明の観察または撮影用器具及び輝度測定用器具を構成する本体1a、1bの一形状例を示す縦断面図

【図24】本発明の観察または撮影用器具及び輝度測定用器具を構成する本体1a、1bの他の形状例を示す縦断面図

【図25】本発明の観察または撮影用器具及び輝度測定用器具を構成する本体1a、1bの他の形状例を示す縦断面図

50 【図26】本発明の観察または撮影用器具及び輝度測定

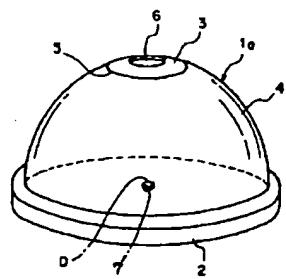
用器具を構成する本体1a, 1bの他の形状例を示す縦断面図

## 【符号の説明】

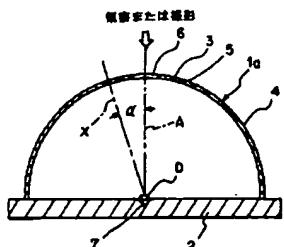
1a, 1b…本体、2…基台部、3…上端部分、4…残余部分、5…外縁、6…観察用開孔、7…載置部、8…

拡大レンズ、9…開口部、10…接着部、11…輝度計、12…照度計、13…宝石載置台、100…部材、101…筒体、110…輝度センサ部、120…照度センサ部、130…宝石載置部

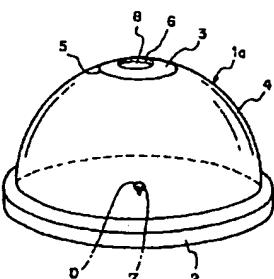
【図1】



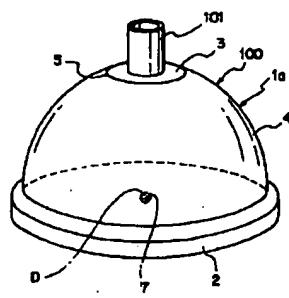
【図2】



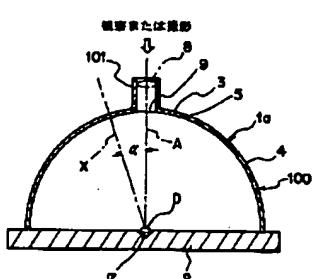
【図3】



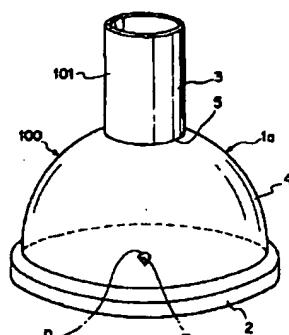
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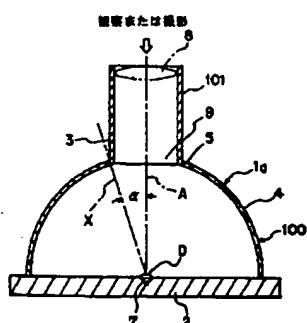
【図5】



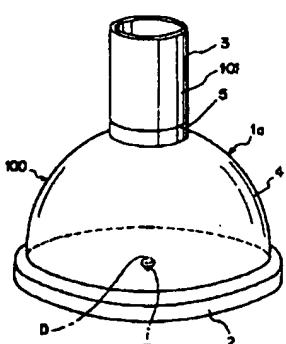
【図6】



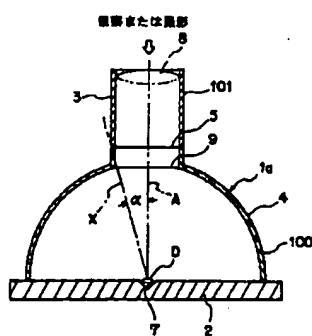
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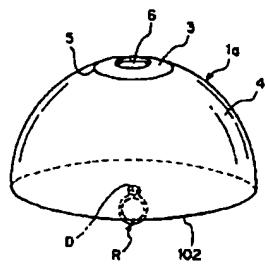
【図8】



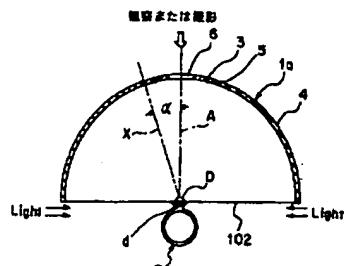
【図9】



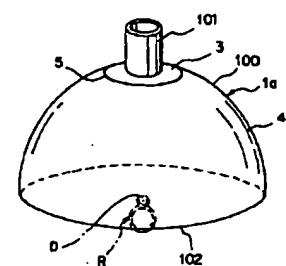
【図10】



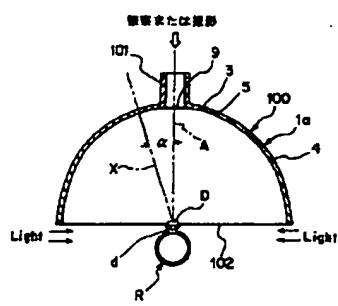
【図11】



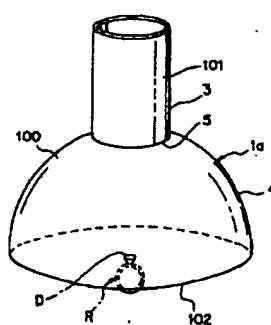
【図12】



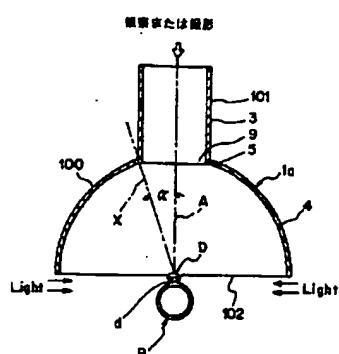
【図13】



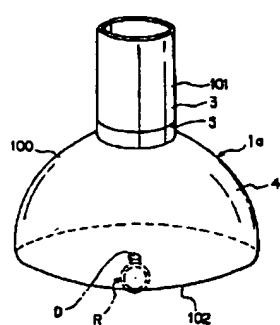
【図14】



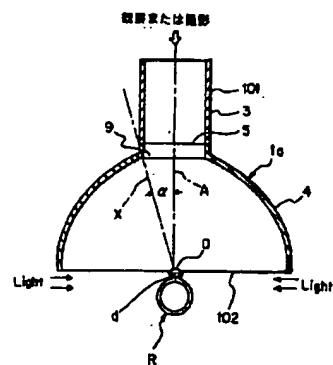
【図15】



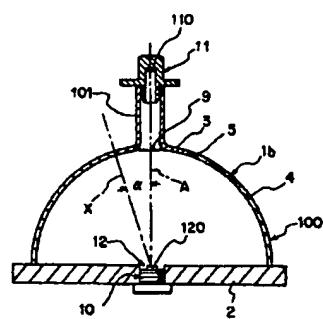
【図16】



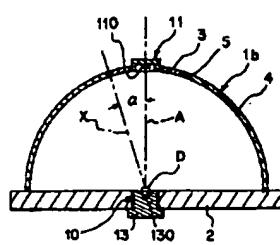
【図17】



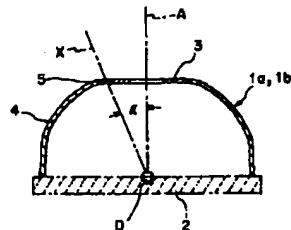
【図18】



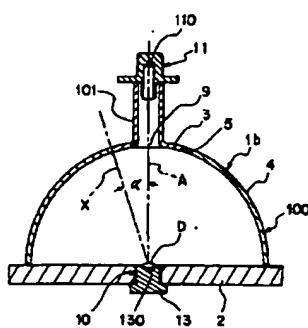
【図20】



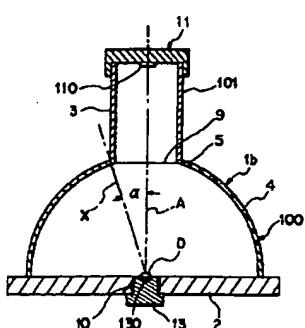
【図25】



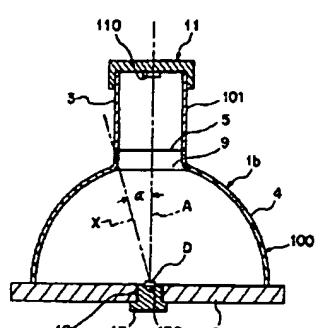
【図19】



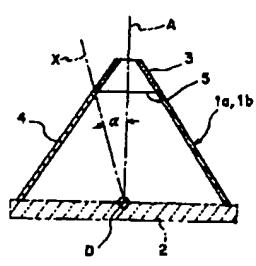
【図21】



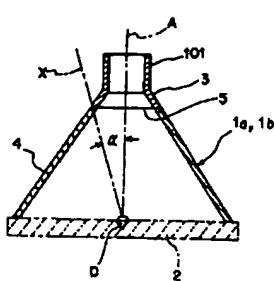
【図22】



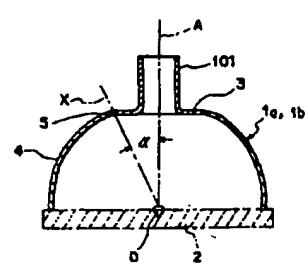
【図23】



【図24】



【図26】



# PATENT ABSTRACTS OF JAPAN

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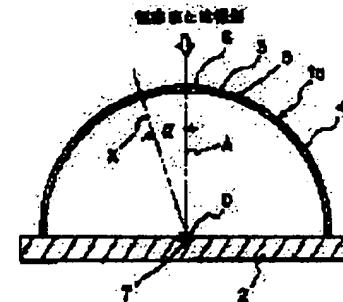
(21)Application number : 06-150413 (71)Applicant : YAMASHITA KINSKU  
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(22)Date of filing : 08.06.1994 (72)Inventor : YAMASHITA KINSKU

## (54) OBSERVATION OR PHOTOGRAPHING TOOL FOR JEWEL SUCH AS DIAMOND, AND JEWEL PHOTOGRAPHING METHOD, USING BOTH BRIGHTNESS MEASURING TOOL AND THE PHOTOGRAPHING TOOL

### (57)Abstract:

PURPOSE: To provide a tool capable of clearly catching a pattern depending on the quality of a diamond cut.

CONSTITUTION: An observation or photographing tool for a jewel such as a diamond has a hemispherical, dome type or conical body 1a, and this body 1a is formed out of a material allowing light transmission. In addition, the upper end section 3 of the body 1a is formed to have a larger light transmittance than a remaining section 4. Also, the section 3 is so constituted that a linear line X drawn between the external surface thereof and the center of a placement section 7 formed at the center of a base 2, or a linear line X drawn between the surface 5 and the lower end center of the body 1a forms an angle  $\alpha$  within the range of 10 to 25 degrees with the axial line A of the body 1a. Furthermore, the section 3 has an observation hole 6 at a center.



### LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

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[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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**CLAIMS**

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[Claim(s)]

[Claim 1] While it has mainframe 1a of the shape of the shape of a semi-sphere whose interior is hollow, the shape of a dome, and a drill, and the pedestal section 2 which has the installation section 7 of a jewel in the center, and supports the above-mentioned mainframe 1a and the above-mentioned mainframe 1a consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1a, the permeability of light consists of a residual fraction 4 of mainframe 1a greatly, and this upper-limit fraction 3 The observation of the jewels, such as a diamond, or the instrument for photography with which it was constituted so that straight-line X which connects the rim 5 and the center of the installation section 7 might have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1a, and the puncturing for observation 6 was further formed in the center of the upper-limit fraction 3.

[Claim 2] Mainframe 1a which consists of a barrel 101 set up by the opening 9 by which the interior was established in the upper limit of the member 100 of the shape of the shape of a semi-sphere which is hollow, the shape of a dome, and a drill, and this member 100, While it has the installation section 7 of a jewel in the center, it has the pedestal section 2 which supports the above-mentioned mainframe 1a and the above-mentioned mainframe 1a consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1a containing a barrel 101, the permeability of light consists of a residual fraction 4 of mainframe 1a greatly, and this upper-limit fraction 3 The observation of the jewels, such as a diamond, or the instrument for photography constituted so that straight-line X which connects the rim 5 and the center of the installation section 7 might have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1a.

[Claim 3] While it has mainframe 1a of the shape of the shape of a semi-sphere which the interior is hollow and the soffit opened wide, the shape of a dome, and a drill and the above-mentioned mainframe 1a consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1a, the permeability of light consists of a residual fraction 4 of mainframe 1a greatly, and this upper-limit fraction 3 The observation of the jewels, such as a diamond, or the instrument for photography with which it was constituted so that straight-line X which connects the rim 5 and the soffit center of mainframe 1a might have the angle of 10 degrees - 25 degrees to axis A of mainframe 1a, and the puncturing for observation 6 was further formed in the center of the upper-limit fraction 3.

[Claim 4] It has mainframe 1a which consists of a barrel 101 set up by the opening 9 prepared in the upper limit of the member 100 of the shape of the shape of a semi-sphere, the shape of a dome, and a drill, and this member 100 the bottom. the interior -- hollow -- and a soffit -- opening -- While this mainframe 1a consists of a material which makes light penetrate, as for the upper-limit fraction 3 of mainframe 1a containing a barrel 101, the permeability of light consists of a residual fraction 4 of mainframe 1a greatly. And this upper-limit fraction 3 is the observation of the jewels, such as a diamond, or the instrument for photography constituted so that straight-line X which connects the rim 5 and the soffit center of mainframe 1a might have the angle of 10 degrees - 25 degrees to axis A of mainframe 1a.

[Claim 5] The observation of the jewels, such as a diamond according to claim 2 or 4, or the instrument for photography with which the upper-limit fraction 3 consists of a fraction of the member 100 of a barrel 101 and its periphery.

[Claim 6] The observation of the jewels, such as a diamond according to claim 2 or 4, or the instrument for photography with which the upper-limit fraction 3 consists of only a barrel 101.

[Claim 7] The observation of the jewels, such as a diamond according to claim 2 or 4, or the instrument for photography with which the upper-limit fraction 3 consists of a fraction by the side of the upper part of a barrel 101.

[Claim 8] The observation of jewels, such as a diamond according to claim 2, 4, 5, 6, or 7, which has a magnifying lens 8 in a barrel 101, or the instrument for photography.

[Claim 9] The observation of jewels, such as a diamond according to claim 1 or 3, which has a magnifying lens 8 in the puncturing for observation 6, or the instrument for photography.

[Claim 10] The observation of the jewels, such as a diamond according to claim \*, \*, \*, \*, \*, \*, \*, or \*, or the instrument for photography with which it consists of one or more sorts of colors of high lightness chosen from the chromatic colors whose upper-limit fractions 3 of mainframe 1a are white, an opalescence, and high lightness, and the residual fraction 4 of mainframe 1a consists of the low achromatic color or low chromatic color of lightness rather than this.

[Claim 11] The photography technique of the diamond which is the photography technique of the diamond using the instrument of claims 3 or 4, or the jewel with a diamond, and a diamond is located in the status that margo-inferior section d of the crown of a diamond carries out an abbreviation correspondence with the height of the margo-inferior section 102 of mainframe 1a, in the center section of the soffit section of mainframe 1a, and is characterized by taking a photograph of the jewel with a diamond or a

diamond from the upper part of the puncturing for observation

[Claim 12] Mainframe 1b of the shape of the shape of a semi-sphere whose interior is hollow, the shape of a dome, and a drill, The pedestal section 2 which has the insertion section 10 which can equip a center section with an illuminometer and a jewel installation base alternatively, and supports the above-mentioned mainframe 1b, The luminance meter 11 by which it is prepared in the upper limit of mainframe 1b as the brightness sensor section 110 is located in right above [ of the above-mentioned insertion section 10 ], The illuminometer 12 with which the above-mentioned insertion section 10 is equipped possible [ a desorption ], and the illuminance sensor section 120 is located in it near the top of the pedestal section 2 in this insertion status, While the above-mentioned insertion section 10 is equipped possible [ a desorption ], it has the jewel installation base 13 in which the jewel installation section 130 is located near the top of the pedestal section 2 in this insertion status and the above-mentioned mainframe 1b consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1b, the permeability of light consists of a residual fraction 4 of mainframe 1b greatly. and this upper-limit fraction 3 It is constituted so that straight-line X which connects the center of the jewel installation section 130 of the jewel installation base in the rim 5 and the insertion status may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1b. Furthermore, the instrument for the measurement of luminance of jewels, such as a diamond with which the top of the jewel installation base 13 which is within the limits of the measurement visual field of the above-mentioned luminance meter 11 at least, and the top of the pedestal section 2 were constituted black.

[Claim 13] Mainframe 1b which consists of a barrel 101 set up by the opening 9 by which the interior was established in the upper limit of the member 100 of the shape of the shape of a semi-sphere which is hollow, the shape of a dome, and a drill, and this member 100, The pedestal section 2 which has the insertion section 10 which can equip a center section with an illuminometer and a jewel installation base alternatively, and supports the above-mentioned mainframe 1b, The luminance meter 11 by which it is prepared in a barrel 101 as the brightness sensor section 110 is located in right above [ of the above-mentioned insertion section 10 ], The illuminometer 12 with which the above-mentioned insertion section 10 is equipped possible [ a desorption ], and the illuminance sensor section 120 is located in it near the top of the pedestal section 2 in this insertion status, While the above-mentioned insertion section 10 is equipped possible [ a desorption ], it has the jewel installation base 13 in which the jewel installation section 130 is located near the top of the pedestal section 2 in this insertion status and the above-mentioned mainframe 1b consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1b containing a barrel 101, the permeability of light consists of a residual fraction 4 of mainframe 1b greatly. and this upper-limit fraction 3 It is constituted so that straight-line X which connects the center of the jewel installation section 130 of the jewel installation base in the rim 5 and the insertion status may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1b. Furthermore, the instrument for the measurement of luminance of jewels, such as a diamond with which the top of the jewel installation base 13 which is within the limits of the measurement visual field of the above-mentioned luminance meter 11 at least, and the top of the pedestal section 2 were constituted black.

[Claim 14] The instrument for the measurement of luminance of jewels, such as a diamond according to claim 13 with which the upper-limit fraction 3 consists of a fraction of the member 100 of a barrel 101 and its periphery.

[Claim 15] The instrument for the measurement of luminance of jewels, such as a diamond according to claim 13 with which the upper-limit fraction 3 consists of only a barrel 101.

[Claim 16] The instrument for the measurement of luminance of jewels, such as a diamond according to claim 13 with which the upper-limit fraction 3 consists of a fraction by the side of the upper part of a barrel 101.

[Claim 17] The instrument for the measurement of luminance of jewels, such as a diamond according to claim 12, 13, 14, 15, or 16 with which it consists of one or more sorts of colors of high lightness chosen from the chromatic colors whose upper-limit fractions 3 of mainframe 1b are white, an opalescence, and high lightness, and the residual fraction 4 of mainframe 1b consists of the low achromatic color or low chromatic color of lightness rather than this.

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[Translation done.]

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] this invention relates to an instrument, in order to measure the brightness of jewels, such as a diamond, further, the photography technique of the instrument for observing or taking a photograph of jewels, such as a diamond, and the jewel using this instrument, and.

[0002]

[Description of the Prior Art] One of the grounds a diamond is liked as a jewel is in the peculiar brightness. The light which carried out incidence to the diamond carries out the internal reflex of the brightness peculiar to this diamond in respect of the cut, and it is produced by returning to the crown side of a diamond. Therefore, the degree of brightness of a diamond has the cut and the very large influence by the right and wrong of proportion. The ideal diamond of a brilliant cut which asked for brightness has the proportion which dropped the carnosity, and each cut side has turned to the right orientation, respectively. For this reason, since the light of most which carried out incidence to the diamond carries out internal reflex regularly in respect of a cut and is brought together in a crown side, the biggest brightness is shown.

[0003] On the other hand, the coarse diamond of the cut which investigated only the carat (size of a stone) has the proportion which left the excessive carnosity, and each cut side has turned to the orientation of a rose rose. For this reason, the light which carried out incidence to the diamond also has few amounts of the light which regular internal reflex cannot be performed but is brought together in a crown side, and also has little brightness. Moreover, in a bad cut, some from which it escapes to a pavilion (rear face) side as it is also have especially the light which carried out incidence. Usually, although a common need person observes a diamond in a shop front with the naked eye, he is visible to the brightness with the same almost said [ the bad diamond of a cut ] of the good diamond of a cut under the influence of a lighting etc. Therefore, it is very difficult for the person without an expertise to recognize the right and wrong of a cut. For this reason, the manufacture and sale which placed the subject are made by the carat which judges as mentioned above and can be reflected in price as a conventional general inclination more directly than the right and wrong of a \*\*\*\*\* cut or proportion, and the actual condition is in it.

[0004] JP,60-109041,U is proposed as a simple instrument for observing brightness of a diamond. This instrument places a diamond between a magnifying glass and the light source, and applies the light from the light source at the red disk which was attached in the objective lens side of a magnifying glass and which has a hole in the center, and the light is made to reflect it in a diamond, and according to this instrument, let red light be the good thing of brightness of the diamond which looks [ many ]. However, since the above-mentioned instrument needs the light source, it can be used only in the location with power, and its carrying is also inconvenient. In addition, Mr. \*\* of the diamond observed with this instrument is a very monotonous thing which consists of only white and one kind of red (red and the fraction with which it does not shine have the white fraction with which it shines). therefore, \*\* based on the strength of a light required for a judgment of brightness -- the shade [ like ] etc. was what is not seen at all and a cubic effect does not have, either For this reason, it was not what can judge brightness of a diamond sufficiently clearly.

[0005] Moreover, the photograph currently used for the written statement of an expert opinion of a diamond etc. applies a lighting to a diamond from a lower part, and a photograph is taken with a camera from the upper part, and Mr. \*\* who copies out by this has the fraction with which human being sees with the naked eye, and shines most, and the black fraction with which it does not shine most, and other fractions serve as a whitish color. When such a photograph had a fault like the following \*\* - \*\* and was an expert for this reason, it was very unclear for the amateur better.

\*\* Just like the negative film of a black-and-white picture, it shines most and the fraction which must be visible is reflected black.

\*\* Since [ that the fraction with which it is not shining most is the same as the fraction with which it is shining most ] it is reflected black, which fraction is shining truly cannot distinguish at all.

\*\* Originally there must be the large fraction of brightness and the parvus fraction of brightness, i.e., the strength of brightness, as fraction reflected white. However, with the above-mentioned photograph, change of the shade based on the difference in such brightness is hardly seen, and the difference of whenever [ brightness-in white fraction ] cannot distinguish at all. Moreover, for this reason, there is no cubic effect of the \*\* Mr. [ itself ]

[0006] As an instrument which solves such a problem, this invention person proposed previously the instrument which can judge the degree of brightness of a diamond easily also by the amateur as JP,2-290542,A. the lower cylinder part of the owner base where this instrument consists of the quality of the material which does not make light penetrate, and the upper cylinder part which consists of the translucence material prepared in the upper part \*\*\*\* -- becoming -- a lower cylinder part -- among those, it

is the instrument which made the front face of the inner pars basilaris ossis occipitalis which should constitute so that the line which connects a pars-basilaris-ossis-occipitalis center and the upper-limb section may have the angle of 10-25 degrees to a lower cylinder part axis, and should lay a diamond the color of the black system which does not reflect According to this instrument, it can gaze at very characteristic Mr. \*\* according to the reflected light from a diamond, and the degree and quality of brightness of a diamond can be easily judged also by the amateur. Moreover, the photograph of the diamond a photograph of was taken with this instrument caught the brightness based on the quality of a cut of a diamond very with high precision, therefore was very suitable as a photograph for the written statements of an expert opinion of a diamond.

[0007]

[Problem(s) to be Solved by the Invention] this invention tends to improve the instrument of JP,2-290542,A further, and tends to offer the instrument which can arrest more vividly Mr. \*\* according to the quality of a cut of a diamond.

[0008] Moreover, when observing the diamond attached in jewels, such as a ring and a necklace, with the above-mentioned instrument, characteristic Mr. \*\* of the diamond [ itself ] can observe as mentioned above. However, usually the person who purchases the jewels to which the diamond was generally attached, such as a ring and a necklace, only chooses goods by a design, the tint, etc. of the matching on the design of not only the quality of a diamond but a diamond, and noble metals (gold, platinum, etc.) and other stones, and color, and the whole jewel including the diamond. About the so-called \*\*\*\* (for example, sapphire and a ruby) inlaid with this point and the conventional instrument mentioned above around the noble-metals fraction and diamond with which the diamond is attached since the front face of the inner pars basilaris ossis occipitalis in which a diamond is laid is constituted by the color of the black system which does not reflect light, there was a fault that it was hardly observable even by the thing of the \*\*\*\* circumference fraction of a diamond (or photography). Therefore, the second purpose of this invention is to offer photography of the jewel using the instrument which can observe simultaneously not only characteristic Mr. \*\* peculiar to a diamond but other jewelry set around the noble-metals fraction and diamond with which the diamond is attached, and still such an instrument.

[0009] Furthermore, as an instrument which can measure brightness of a diamond quantitatively, although this invention person proposed JP,4-194731,A previously, it is in other purposes of this invention offering the instrument which can measure the brightness of a diamond with a more sufficient precision compared with the instrument of JP,4-194731,A.

[0010]

[Means for Solving the Problem] This invention persons acquired the following knowledge, as a result of examining the structure of an instrument where Mr. \*\* of a diamond which is shown in above-mentioned JP,2-290542,A can be arrested more vividly.

[0011] \*\* While the mainframe of an instrument into which a diamond is put is constituted the shape of a semi-sphere, the shape of a dome, and in the shape of a drill and this whole mainframe of an instrument is constituted from a material which makes light penetrate The upper-limit fraction of the mainframe of an instrument consists of a residual fraction (it is a lower part fraction from a upper-limit fraction) so that the permeability of light may become large. And by making into a specific domain the angle domain of the light which carries out incidence to the center (installation section of a diamond) of the mainframe of an instrument through a upper-limit fraction, Mr. \*\* according to the quality of a cut of a diamond is more vividly arrested compared with the conventional instrument.

[0012] \*\* the mainframe of an instrument of the shape of the shape of a semi-sphere of the above again, the shape of a dome, and a drill -- a soffit -- opening -- it considers as structure the bottom and other jewelry characteristic Mr. \*\* of a diamond not only can observe like the above, but set around the noble-metals fraction and diamond with which the diamond is attached can be observed very clearly with a mass color by locating the jewel with a diamond in the soffit of this instrument in the predetermined status

\*\* Compared with the conventional instrument, more exact measurement of the brightness of a diamond is further attained by applying the structure of the above-mentioned \*\* to the instrument for the measurement of luminance of a diamond.

[0013] this invention was made based on such knowledge, and the configuration is as follows.

(1) While it has mainframe 1a of the shape of the shape of a semi-sphere whose interior is hollow, the shape of a dome, and a drill, and the pedestal section 2 which has the installation section 7 of a jewel in the center, and supports the above-mentioned mainframe 1a and the above-mentioned mainframe 1a consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1a, the permeability of light consists of a residual fraction 4 of mainframe 1a greatly. and this upper-limit fraction 3 The observation of the jewels, such as a diamond, or the instrument for photography with which it was constituted so that straight-line X which connects the rim 5 and the center of the installation section 7 might have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1a, and the puncturing for observation 6 was further formed in the center of the upper-limit fraction 3.

[0014] (2) Mainframe 1a which consists of a barrel 101 set up by the opening 9 by which the interior was established in the upper limit of the member 100 of the shape of the shape of a semi-sphere which is hollow, the shape of a dome, and a drill, and this member 100, While it has the installation section 7 of a jewel in the center, it has the pedestal section 2 which supports the above-mentioned mainframe 1a and the above-mentioned mainframe 1a consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1a containing a barrel 101, the permeability of light consists of a residual fraction 4 of mainframe 1a greatly. and this upper-limit fraction 3 The observation of the jewels, such as a diamond, or the instrument for photography constituted so that straight-line X which connects the rim 5 and the center of the installation section 7 might have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1a.

[0015] (3) While it has mainframe 1a of the shape of the shape of a semi-sphere which the interior is hollow and the soffit opened wide, the shape of a dome, and a drill and the above-mentioned mainframe 1a consists of a material which makes light penetrate

As for the upper-limit fraction 3 of mainframe 1a, the permeability of light consists of a residual fraction 4 of mainframe 1a greatly, and this upper-limit fraction 3 The observation of the jewels, such as a diamond, or the instrument for photography with which it was constituted so that straight-line X which connects the rim 5 and the soffit center of mainframe 1a might have the angle of 10 degrees - 25 degrees to axis A of mainframe 1a, and the puncturing for observation 6 was further formed in the center of the upper-limit fraction 3.

[0016] (4) It has mainframe 1a which consists of a barrel 101 set up by the opening 9 prepared in the upper limit of the member 100 of the shape of the shape of a semi-sphere, the shape of a dome, and a drill, and this member 100 the bottom. the interior -- hollow -- and a soffit -- opening -- While this mainframe 1a consists of a material which makes light penetrate, as for the upper-limit fraction 3 of mainframe 1a containing a barrel 101, the permeability of light consists of a residual fraction 4 of mainframe 1a greatly. And this upper-limit fraction 3 is the observation of the jewels, such as a diamond, or the instrument for photography constituted so that straight-line X which connects the rim 5 and the soffit center of mainframe 1a might have the angle of 10 degrees - 25 degrees to axis A of mainframe 1a.

[0017] (5) The observation of the jewels, such as a diamond, or the instrument for photography with which the upper-limit fraction 3 consists of a fraction of the member 100 of a barrel 101 and its periphery in the above (2) or the instrument of (4).

(6) The observation of the jewels, such as a diamond, or the instrument for photography with which the upper-limit fraction 3 consists of only a barrel 101 in the above (2) or the instrument of (4).

(7) The observation of the jewels, such as a diamond, or the instrument for photography with which the upper-limit fraction 3 consists of a fraction by the side of the upper part of a barrel 101 in the above (2) or the instrument of (4).

[0018] (8) The observation of jewels, such as a diamond, which has a magnifying lens 8 in the puncturing for observation 6, or the barrel 101 in the instrument of the above (1), (2), (3), (4), (5), (6), or (7), or the instrument for photography.

(9) In the instrument of the above (1), (2), (3), (4), (5), (6), (7), or (8) The observation of the jewels, such as a diamond, or the instrument for photography with which it consists of one or more sorts of colors of high lightness chosen from the chromatic colors whose upper-limit fractions 3 of mainframe 1a are white, an opalescence, and high lightness, and the residual fraction 4 of mainframe 1a consists of the low achromatic color or low chromatic color of lightness rather than this.

[0019] (10) It is the photography technique of the above (3), the diamond using the instrument of (4), or the jewel with a diamond. The status that margo-inferior section d of the crown of a diamond carries out an abbreviation correspondence with the height of the margo-inferior section 102 of mainframe 1a locates a diamond in the center section of the soffit section of mainframe 1a. The photography technique of the diamond characterized by taking a photograph of the jewel with a diamond or a diamond from the upper part of the puncturing for observation 6, or the barrel 101, or the jewel with a diamond.

[0020] (11) Mainframe 1b of the shape of the shape of a semi-sphere whose interior is hollow, the shape of a dome, and a drill, The pedestal section 2 which has the insertion section 10 which can equip a center section with an illuminometer and a jewel installation base alternatively, and supports the above-mentioned mainframe 1b, The luminance meter 11 by which it is prepared in the upper limit of mainframe 1b as the brightness sensor section 110 is located in right above [ of the above-mentioned insertion section 10 ], The illuminometer 12 with which the above-mentioned insertion section 10 is equipped possible [ a desorption ], and the illuminance sensor section 120 is located in it near the top of the pedestal section 2 in this insertion status, While the above-mentioned insertion section 10 is equipped possible [ a desorption ], it has the jewel installation base 13 in which the jewel installation section 130 is located near the top of the pedestal section 2 in this insertion status and the above-mentioned mainframe 1b consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1b, the permeability of light consists of a residual fraction 4 of mainframe 1b greatly, and this upper-limit fraction 3 It is constituted so that straight-line X which connects the center of the jewel installation section 130 of the jewel installation base in the rim 5 and the insertion status may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1b. Furthermore, the instrument for the measurement of luminance of jewels, such as a diamond with which the top of the jewel installation base 13 which is within the limits of the measurement visual field of the above-mentioned luminance meter 11 at least, and the top of the pedestal section 2 were constituted black.

[0021] (12) Mainframe 1b which consists of a barrel 101 set up by the opening 9 by which the interior was established in the upper limit of the member 100 of the shape of the shape of a semi-sphere which is hollow, the shape of a dome, and a drill, and this member 100, The pedestal section 2 which has the insertion section 10 which can equip a center section with an illuminometer and a jewel installation base alternatively, and supports the above-mentioned mainframe 1b, The luminance meter 11 by which it is prepared in a barrel 101 as the brightness sensor section 110 is located in right above [ of the above-mentioned insertion section 10 ], The illuminometer 12 with which the above-mentioned insertion section 10 is equipped possible [ a desorption ], and the illuminance sensor section 120 is located in it near the top of the pedestal section 2 in this insertion status, While the above-mentioned insertion section 10 is equipped possible [ a desorption ], it has the jewel installation base 13 in which the jewel installation section 130 is located near the top of the pedestal section 2 in this insertion status and the above-mentioned mainframe 1b consists of a material which makes light penetrate As for the upper-limit fraction 3 of mainframe 1b containing a barrel 101, the permeability of light consists of a residual fraction 4 of mainframe 1b greatly, and this upper-limit fraction 3 It is constituted so that straight-line X which connects the center of the jewel installation section 130 of the jewel installation base in the rim 5 and the insertion status may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1b. Furthermore, the instrument for the measurement of luminance of jewels, such as a diamond with which the top of the jewel installation base 13 which is within the limits of the measurement visual field of the above-mentioned luminance meter 11 at least, and the top of the pedestal section 2 were constituted black.

[0022] (13) The instrument for the measurement of luminance of jewels, such as a diamond with which the upper-limit fraction 3

consists of a fraction of the member 100 of a barrel 101 and its periphery in the instrument of the above (12).

(14) The instrument for the measurement of luminance of jewels, such as a diamond with which the upper-limit fraction 3 consists of only a barrel 101 in the instrument of the above (12).

(15) The instrument for the measurement of luminance of jewels, such as a diamond with which the upper-limit fraction 3 consists of a fraction by the side of the upper part of a barrel 101 in the instrument of the above (12).

(16) The instrument for the measurement of luminance of jewels, such as a diamond with which it consists of one or more sorts of colors of high lightness chosen from the chromatic colors whose upper-limit fractions 3 of mainframe 1b are white, an opalescence, and high lightness in the instrument of the above (11), (12), (13), (14), or (15), and the residual fraction 4 of mainframe 1b consists of the low achromatic color or low chromatic color of lightness rather than this.

[0023]

[Function] In observation of this invention, or the instrument for photography, that Mr. \*\* of a diamond can be more vividly arrested compared with above-mentioned JP,2-290542,A. While a comparatively bright light is incorporated inside mainframe 1a from the domain of 20 degrees - 50 degrees of the upper parts (that is, upper-limit fraction 3) of a diamond. That a light moderate inside mainframe 1a also from the fraction except the (that is, residual fraction 4) is incorporated, since the equation of the distance of each fraction of the internal surface of parietal bone of mainframe 1a of the shape of the shape of a semi-sphere, the shape of a dome, and a drill and a diamond is carried out further. It is thought that it is for the amount of the light which carries out incidence to a diamond from various orientation to equalize.

[0024] When the instrument which has the pedestal section 2 is used and it observes or takes a photograph of a diamond, diamond D (diamond attached in \*\*\*\* or the jewel) is put on the installation section 7 formed in the center of the pedestal section 2, and a photograph of the diamond inside mainframe 1a is observed or taken from opening of the upper limit of the puncturing for observation 6, or the barrel 101. moreover, the soffit of mainframe 1a -- opening -- when an instrument is used the bottom and it observes or takes a photograph of the jewel with a diamond, in the center section of the soffit section of mainframe 1a, jewel R is located in the status that margo-inferior section d of the crown of a diamond carries out an abbreviation correspondence with the height of the margo-inferior section 102 of mainframe 1a, and a photograph of jewel R is observed or taken from opening of the upper limit of the puncturing for observation 6, or the

[0025] Also in which the above-mentioned instrument, although light carries out incidence from the whole into mainframe 1a, there are many amounts of incidence of the light from the upper-limit fraction 3 especially with the high permeability of light. Therefore, when it sees from the diamond placed in the center of a soffit of the installation section 7 or mainframe 1a, much light will carry out incidence from the domain (upper-limit fraction 3) of 20 degrees - 50 degrees of the upper parts, and a light fewer than this will carry out incidence from the residual fraction 4.

[0026] The light which carried out incidence to the diamond is returned in the orientation of a crown by internal reflex, and a part penetrates it to a pavilion side by the right and wrong of a cut of a diamond. And the light collected in the orientation of a crown by internal reflex reaches an observer or a camera lens. In this observation, characteristic Mr. \*\* appears according to the strength of the above-mentioned reflected light from each cut side of a diamond. That is, from the upper-limit fraction 3 of 20 degrees - 50 degrees of the upper parts, the fraction with the strongest reflected light energy reflects only the light which carries out incidence, and looks whitish. Moreover, the light which carried out incidence from the upper-limit fraction 3, and the light which carried out incidence from the residual fraction 4 are mixed at a various rate, and other fractions are visible to the color which changed from the bright color to how many step story it is to the dark color. Moreover, most or the fraction which does not reflect at all but is penetrated to a pavilion side becomes blackish and has a visible light. Therefore, since internal reflex is produced in respect of almost all cuts, the profile of the diamond [ itself ] is clear (the profile of a round appears clearly) very much, and, moreover, the diamond of a brilliant cut with it has very many rates of a white fraction and the fraction of a bright color collectively. [ a good cut and ] [ ideal ] Moreover, white "arrow" with which the diamond of the brilliant cut which has ideal proportion is prolonged in the eight orientation from the center at a radial accepts very clearly. On the other hand, a cut is coarse, with the diamond whose proportion is not good, since the whole reflective energy is weak, on the whole, there are few rates of a white fraction, and the rate of a dark color increases. Moreover, with the bad diamond of a cut, the periphery section becomes blackish in the shape of irregularity, and it is especially missing and visible. Thus, it is visible for penetrating to a pavilion side as it is, without light carrying out internal reflex. Therefore, this fraction is a fraction with which it does not shine at all. moreover, such a diamond -- overall -- \*\* -- it is [ like ] irregular and an "arrow" which was mentioned above has not appeared at all

[0027] Although it is thought that the fundamental principle which Mr. \*\* based on the reflected light of a diamond can observe with the instrument of this invention is the same as that of the instrument of JP,2-290542,A, with the instrument of this invention, clearer Mr. \*\* is observable with the characteristic configuration of the mainframe 1a compared with the instrument of JP,2-290542,A. moreover, the soffit of mainframe 1a -- opening, when it observes the bottom using an instrument by locating jewel R in the status that margo-inferior section d of the crown of a diamond carries out an abbreviation correspondence with the height of the margo-inferior section 102 of mainframe 1a (or photography) While Mr. \*\* who mentioned above about the diamond is observable, about the noble-metals fraction and other jewelry of the periphery, it is observable by the entire mass color (or photography). This ground is not necessarily clear.

[0028] Angle alpha which straight-line chi and axis A of mainframe 1a which connect the rim 5 of the upper-limit fraction 3 and the center of the installation section 7 make in the case of the instrument which has the pedestal section 2 in the lower part of mainframe 1a is limited to 10 degrees - 25 degrees. moreover, the soffit of mainframe 1a -- opening -- when it is an instrument the bottom, angle alpha which straight-line chi and axis A of the shaft of mainframe 1a which connect the rim 5 of the upper-limit fraction 3 and the soffit center of mainframe 1a make is limited to 10 degrees - 25 degrees Mr. \*\* who described above when

these angle alpha separated from the domain which is 10 degrees - 25 degrees comes to be seldom visible. That is, if the above-mentioned angle is less than 10 degrees, a diamond becomes blackish and is visible to the whole, and the diamond of a good cut cannot arrest the Mr. \*\* sufficiently clearly, either. On the other hand, if the above-mentioned angle exceeds 25 degrees, a diamond glitters and looks reverse to the whole and Mr. \*\* cannot be arrested sufficiently clearly in this case. \*\*\*\*\* which needs the quantity of light delicate [ when this has the above-mentioned, too large angle alpha, there are too many amounts of the light which shines upon a diamond directly, and ] since there are too few amounts of light conversely when an angle is too small, when it is any on the other hand -- it is thought that it does not result in a manifestation [ like ]

[0029] Therefore, with the instrument of this invention, with respect to the mode of the structure, a size, etc., there is nothing and 10 degrees - 25 degrees angle alpha is preferably made into 15\*\*3 degrees. And as long as the instrument of this invention satisfies such conditions, there is no limitation in the size etc., for example, also let the whole instrument be a size about the thumb. It is desirable to consider as one or more sorts of colors of high lightness chosen from white, an opalescence, and the chromatic color of high lightness with the instrument of this invention, from the viewpoint of taking in light positively inside mainframe 1a about the upper-limit fraction 3, although there is especially no constraint in the color of the upper-limit fraction 3 and the residual fraction 4 etc.

[0030] \*\* of the diamond observed by the color of this residual fraction 4 on the other hand that the residual fraction 4 should seldom just make light penetrate compared with the upper-limit fraction 3 although there is especially no constraint in the color -- colors [ like ] differ for example, \*\* of the diamond observed when the color of the residual fraction 4 is an achromatic color -- as for a color [ like ], a gray serves as the keynote moreover -- the case where the color of the residual fraction 4 is a chromatic color -- \*\* of a diamond -- as for a color [ like ], each chromatic color serves as the keynote Therefore, what is necessary is just to let the colors of the residual fraction 4 be a comparatively bright chromatic color, for example, red, blue, green, yellow, an orange, pinks or these similar colors, a fluorescence color, etc. to gaze at Mr. \*\* beautiful in color. Moreover, the vertical orientation or the hoop direction of the residual fraction 4 can also consist of two or more different colors. Thus, by making the residual fraction 4 into a chromatic color, the color of the internal surface of parietal bone of the residual fraction 4 is made bright, and the light which carries out incidence to this fraction makes the color of this internal surface of parietal bone a color just like a fluorescence color, and makes it a thing more skillful than Mr. \*\* of the diamond observed.

[0031] Moreover, since there will be no constraint in the quality of the material, translucent plastics material, glass material, etc. can constitute and comparatively thin paper will also penetrate light moderately if mainframe 1a makes light penetrate moderately, it can also constitute from such paper. Moreover, in the instrument of this invention, although a simultaneous operation is obtained with having mentioned above when mainframe 1a consists of a barrel 101 set up by the member 100 and its upper limit of the shape of the shape of a semi-sphere, the shape of a dome, and a drill, there is an advantage that there are few degrees by which incorporation of the light inside [ from the upper-limit fraction 3 ] mainframe 1a is especially barred with an observer's face, the camera for photography, etc.

[0032] since [ moreover, ] the instrument of this invention can gaze at Mr. \*\* of the diamond expanded by considering as the structure which attached the magnifying lens 8 in the puncturing for observation 6, or the barrel 101 -- very much -- legible -- \*\* -- there is an advantage of being easy to carry out a judgment [ like ] Moreover, although a special lighting is not necessarily required when observing or taking a photograph of a diamond with the instrument of this invention, it may be desirable to irradiate light positively from the surroundings of mainframe 1a with some luminosity of the location to use.

[0033] Next, in order to measure the brightness of a diamond with the instrument for the measurement of luminance of this invention, the luminosity of a lighting system is adjusted so that the insertion section 10 of the pedestal section 2 may be equipped with an illuminometer 12, the illuminance inside mainframe 1b may be first measured with an illuminometer 12 and the pointer of an illuminometer 12 may serve as a regular illuminance, where mainframe 1b is illuminated by the lighting system (not shown) which can adjust a luminosity. Subsequently, after demounting an illuminometer 12 from the insertion section 10, this insertion section 10 is equipped with the jewel installation base 13 (at this time, the diamond is not put on the jewel installation section 130), and the measured value of a luminance meter 11 is read. Although the top of the jewel installation base 13 in the measurement visual field of a luminance meter 11 and the pedestal section 2 is constituted black, a luminance meter 11 detects \*\*\*\* from these tops, and shows few [ the pointer of a luminance meter 11 ] numeric values. Here, this pointer is set by the zero with a zero adjustment knob. The jewel installation base 13 is demounted from the insertion section 10, after putting diamond D on the jewel installation base 13 horizontally, it attaches in the insertion section 10 again, and the measured value by the luminance meter 11 is read. This measured value is the true brightness of diamond D.

[0034]

[Example] Hereafter, observation of this invention or the example of the instrument for photography is explained. In addition, an explanation of the following examples states observation of a diamond to an example. The drawing 1 and the drawing 2 show one example of this invention, and the mainframe of the shape of a semi-sphere whose interior of 1a is hollow, and 2 are the pedestal sections 2 which support this mainframe 1a.

[0035] Although the above-mentioned mainframe 1a consists of a material which makes light penetrate, the permeability of light differs and the upper-limit fraction 3 and the residual fraction 4 of a lower part of the shape of a disk of mainframe 1a have [ the upper-limit fraction 3 ] the permeability of light larger than the residual fraction 4. For example, the upper-limit fraction 3 consists of one or more sorts of colors of high lightness chosen from white, an opalescence, and the chromatic color of high lightness, and the residual fraction 4 is constituted from this by the low achromatic color or low chromatic color of lightness. The above-mentioned upper-limit fraction 3 is constituted so that straight-line X which connects the center of the installation section 7 which carries out the following to the rim 5 may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1a, and

the puncturing for observation 6 is formed in the center of this upper-limit fraction 3.

[0036] The above-mentioned pedestal section 2 has the installation section 7 of a jewel in the center. Although a mere concavity may constitute this installation section 7 when \*\*\*\* which is shown in drawing is set as the object of observation, when the diamond attached in the ring is set as the object of observation, for example, the slot which can insert the ring section of a ring may constitute and the configuration is arbitrary. What is necessary is just the configuration which can be laid in short with the posture (that is, posture in which the axis of a diamond carries out an abbreviation correspondence with axis A of mainframe 1a) in which the diamond which it is going to observe is right. Moreover, in order to gaze at him or take a photograph of Mr. \*\* of a diamond vividly, it is desirable [ the top fraction which goes into the visual field of an observer or the instruments (camera etc.) for photography when it shows from the puncturing for observation 6 ] to consider as the nigrities or the color of a black system at least among the tops of the pedestal section 2.

[0037] Drawing 3 shows other examples of this invention, and forms a magnifying lens 8 in the puncturing for observation 6. The so-called paper lens can also be used as this magnifying lens 8. In addition, since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted.

[0038] The drawing 4 and the drawing 5 show other examples of this invention, and constitute them from a barrel 101 set up by the opening 9 by which mainframe 1a was prepared in the interior by the upper limit of the member 100 of the shape of a semi-sphere in the air, and this member 100. Although the above-mentioned mainframe 1a consists of a material which the whole makes penetrate light, the permeability of light differs and the upper-limit fraction 3 and the residual fraction 4 of mainframe 1a containing a barrel 101 have [ the upper-limit fraction 3 ] the permeability of light larger than the residual fraction 4. For example, the upper-limit fraction 3 consists of one or more sorts of colors of high lightness chosen from white, an opalescence, and the chromatic color of high lightness, and the residual fraction 4 is constituted from this by the low achromatic color or low chromatic color of lightness.

[0039] The above-mentioned upper-limit fraction 3 consists of a fraction (disk-like fraction) of the member 100 of a barrel 101 and its periphery, and it is constituted so that straight-line X which connects the rim 5 and the center of the installation section 7 may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1a. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted.

[0040] The drawing 6 and the drawing 7 show other examples of this invention, and constitute the upper-limit fraction 3 only from a barrel 101 in this example to the example of the drawing 4 and the drawing 5 having constituted the upper-limit fraction 3 from the fraction of the member 100 of a barrel 101 and its periphery. Therefore, in this example, the rim 5 of the upper-limit fraction 3 will be formed in the soffit of a barrel 101. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted.

[0041] The drawing 8 and the drawing 9 show other examples of this invention, and constitute the upper-limit fraction 3 from a fraction by the side of the upper part of a barrel 101 in this example to the barrel 101 having all boiled the upper-limit fraction 3, and having constituted it from an example of the drawing 6 and the drawing 7 more. Therefore, in this example, the rim 5 of the upper-limit fraction 3 will be formed in the middle of a barrel 101. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted. In the example of drawing which was described above 14 - view 9, as the chain line in drawing shows, a magnifying lens 8 can be formed in a barrel 101.

[0042] The drawing 10 and the drawing 11 show one example in case an instrument consists of only the mainframe 1a of the shape of a semi-sphere which the interior is hollow and the soffit opened wide. Although the above-mentioned mainframe 1a consists of a material which the whole makes penetrate light, the permeability of light differs and the upper-limit fraction 3 and the residual fraction 4 of mainframe 1a have [ the upper-limit fraction 3 ] the permeability of light larger than the residual fraction 4. For example, the upper-limit fraction 3 consists of one or more sorts of colors of high lightness chosen from white, an opalescence, and the chromatic color of high lightness, and the residual fraction 4 is constituted from this by the low achromatic color or low chromatic color of lightness.

[0043] The above-mentioned upper-limit fraction 3 is constituted so that straight-line X which connects the rim 5 and the soffit center of mainframe 1a may have the angle of 10 degrees - 25 degrees to axis A of mainframe 1a, and the puncturing for observation 6 is formed in the center of the upper-limit fraction 3. Moreover, also in this example, you may form a magnifying lens 8 in the puncturing for observation 6 like the example of drawing 3. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted.

[0044] that the drawing 12 and the drawing 13 indicate other examples of this invention to be -- it is -- a soffit -- opening -- mainframe 1a consists of a barrel 101 set up by the opening 9 prepared in the interior by the upper limit of the member 100 of the shape of a semi-sphere in the air, and this member 100 the bottom Although the above-mentioned mainframe 1a consists of a material which the whole makes penetrate light, the permeability of light differs and the upper-limit fraction 3 and the residual fraction 4 of mainframe 1a containing a barrel 101 have [ the upper-limit fraction 3 ] the permeability of light larger than the residual fraction 4. For example, the upper-limit fraction 3 consists of one or more sorts of colors of high lightness chosen from white, an opalescence, and the chromatic color of high lightness, and the residual fraction 4 is constituted from this by the low achromatic color or low chromatic color of lightness.

[0045] The above-mentioned upper-limit fraction 3 consists of a fraction (disk-like fraction) of the member 100 of a barrel 101 and its periphery, and it is constituted so that straight-line X which connects the rim 5 and the soffit center of mainframe 1a may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1a. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted.

[0046] The drawing 14 and the drawing 15 show other examples of this invention, and constitute the upper-limit fraction 3 only

from a barrel 101 in this example to the example of the drawing 12 and the drawing 13 having constituted the upper-limit fraction 3 from the fraction of the member 100 of a barrel 101 and its periphery. Therefore, in this example, the rim 5 of the upper-limit fraction 3 will be formed in the soffit of a barrel 101. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted.

[0047] The drawing 16 and the drawing 17 show other examples of this invention, and constitute the upper-limit fraction 3 from a fraction by the side of the upper part of a barrel 101 in this example to the barrel 101 having all boiled the upper-limit fraction 3, and having constituted it from an example of the drawing 14 and the drawing 15 more. Therefore, in this example, the rim 5 of the upper-limit fraction 3 will be formed in the middle of a barrel 101. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted. In the example of drawing which was described above 12 - view 17, a magnifying lens 8 can be formed in a barrel 101 like the example shown in drawing 4 - view 9.

[0048] When the instrument ( drawing 1 - view 9 ) which has the pedestal section 2 among observation or the photography instruments of the above this inventions is used and it observes or takes a photograph of a diamond, diamond D (diamond attached in \*\*\*\* or the jewel) is put on the installation section 7 formed in the center of the pedestal section 2, and a photograph of the diamond inside mainframe 1a is observed or taken from opening of the upper limit of the puncturing for observation 6, or the barrel 101.

[0049] Moreover, when the instrument ( drawing 10 - view 17 ) which the soffit of mainframe 1a opened wide is used and a photograph of the jewel with a diamond is observed or taken, In the center section of the soffit section of mainframe 1a, jewel R with a diamond is located in the status that margo-inferior section d of the crown of a diamond carries out an abbreviation correspondence with the height of the margo-inferior section 102 of mainframe 1a, and a photograph of jewel R is observed or taken from opening of the upper limit of the puncturing for observation 6, or the barrel 101. In this case, when that is not right, as shown in drawing, the natural light is applied from the side of jewel R using light light or reflecting plates (mirror etc.), and the surrounding noble-metals fraction and other surrounding jewelry of diamond D tend to be made to appear, although there is especially no need when the natural light or indoor light fully hits jewel R from the side. Moreover, according to the luminosity of the location a photograph of is observed or taken, when using which instrument, if required, the natural light which used light light or reflecting plates (mirror etc.) for mainframe 1a from the side will be applied, and light will be positively incorporated in mainframe 1a.

[0050] Next, the example of the instrument for the measurement of luminance of this invention is explained. The drawing 18 and the drawing 19 show one example of this invention, and the instrument has the pedestal section 2 which supports mainframe 1b and mainframe 1b of the shape of a semi-sphere whose interior is hollow, the luminance meter 11 prepared in the upper limit of mainframe 1b, the illuminometer 12 ( drawing 18 ) attached in the pedestal section 2 possible [ a desorption ], and the jewel installation base 13 ( drawing 19 ).

[0051] The above-mentioned mainframe 1b consists of a barrel 101 set up by the opening 9 by which the interior was established in the upper limit of the member 100 of the shape of a semi-sphere in the air, and this member 100. Although this mainframe 1b consists of a material which the whole makes penetrate light, the permeability of light differs and the upper-limit fraction 3 and the residual fraction 4 including the barrel 101 of mainframe 1b have [ the upper-limit fraction 3 ] the permeability of light larger than the residual fraction 4. For example, the upper-limit fraction 3 consists of one or more sorts of colors of high lightness chosen from white, an opalescence, and the chromatic color of high lightness, and the residual fraction 4 is constituted from this by the low achromatic color or low chromatic color of lightness.

[0052] The above-mentioned upper-limit fraction 3 consists of a fraction (disk-like fraction) of the member 100 of a barrel 101 and its periphery. The upper-limit fraction 3 is constituted so that straight-line X which connects the center of the jewel installation section 130 of the jewel installation base in the rim 5 and the insertion status may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1b. The insertion section 10 which can equip with the illuminometer 12 and the jewel installation base 13 alternatively is formed in the center of the above-mentioned pedestal section 2. the insertion by which, as for the insertion section 10, an illuminometer and a jewel installation base are \*\*\*\*ed by the screw formula in this example -- it is constituted by the hole The above-mentioned luminance meter 11 is formed in the upper limit (upper limit of a barrel 101) of mainframe 1b, as the brightness sensor section 110 is located in right above [ of the above-mentioned insertion section 10 ]. Moreover, in order for \*\*\*\* from the periphery not to go into the brightness sensor section 110, the enclosure of the brightness sensor section 110 is carried out by the shading cylinder.

[0053] The above-mentioned insertion section 10 is equipped with the above-mentioned illuminometer 12 possible [ a desorption ], and it is constituted so that the illuminance sensor section 120 may be located near the top of the pedestal section 2 in this insertion status. Moreover, the above-mentioned insertion section 10 is equipped also with the above-mentioned jewel installation base 13 possible [ a desorption ], and it is constituted so that the jewel installation section 130 may be located near the top of the pedestal section 2 in this insertion status. Moreover, the top of the jewel installation base 13 which is within the limits of the measurement visual field of the above-mentioned luminance meter 11, and the top of the pedestal section 2 are constituted black. In addition, since it is the same as that of the example previously described about the configuration of the others which can also stick the black cloth with little reflex etc. in order to consider as such a black side, the same sign is attached and a detailed explanation is omitted.

[0054] Drawing 20 shows other examples of this invention, and constitutes mainframe 1b only from a semi-sphere-like member. Although the above-mentioned mainframe 1b consists of a material which makes light penetrate, the permeability of light differs and the upper-limit fraction 3 and the residual fraction 4 of mainframe 1b have [ the upper-limit fraction 3 ] the permeability of

light larger than the residual fraction 4. For example, the upper-limit fraction 3 consists of one or more sorts of colors of high lightness chosen from white, an opalescence, and the chromatic color of high lightness, and the residual fraction 4 is constituted from this by the low achromatic color or low chromatic color of lightness. The above-mentioned upper-limit fraction 3 is constituted so that straight-line X which connects the center of the jewel installation section 130 of the jewel installation base in the rim 5 and the insertion status may have angle [ of 10 degrees - 25 degrees ] alpha to axis A of mainframe 1b. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted.

[0055] Drawing 21 shows other examples of this invention, and constitutes the upper-limit fraction 3 only from a barrel 101 in this example to the example of the drawing 18 and the drawing 19 having constituted the upper-limit fraction 3 from the fraction (disk-like fraction) of the member 100 of a barrel 101 and its periphery. Therefore, in this example, the rim 5 of the upper-limit fraction 3 will be formed in the soffit of a barrel 101. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted. Drawing 22 shows other examples of this invention, and constitutes the upper-limit fraction 3 from a fraction by the side of the upper part of a barrel 101 in this example to the barrel 101 having all boiled the upper-limit fraction 3, and having constituted it from an example of drawing 21 more.

Therefore, in this example, the rim 5 of the upper-limit fraction 3 will be formed in the middle of a barrel 101. Since it is the same as that of the example previously described about other configurations, the same sign is attached and a detailed explanation is omitted.

[0056] In addition, although the illuminometer 12 and the jewel installation base 13 equip by the screw formula to the insertion section 10 in the above-mentioned example, an insertion method is not limited to this, is in the status which removed mainframe 1b from the pedestal section 2, and can take the arbitrary structures of inserting the illuminometer 12 and the jewel installation base 13 in the insertion section 10 possible [ a desorption ], such as a method. Moreover, it constitutes from this example possible [ removal of a luminance meter 11 ], and enables it to use it as observation of an instrument jewel or an object for photography by removing a luminance meter 11.

[0057] In order to measure the brightness of a diamond with the instrument for the measurement of luminance of the above this inventions, the luminosity of a lighting system is adjusted so that the insertion section 10 of the pedestal section 2 may be equipped with an illuminometer 12, the illuminance inside mainframe 1b may be first measured with an illuminometer 12 and the pointer of an illuminometer 12 may serve as a regular illuminance, where mainframe 1b is illuminated by the lighting system (not shown) which can adjust a luminosity. Subsequently, after demounting an illuminometer 12 from the insertion section 10, this insertion section 10 is equipped with the jewel installation base 13 (at this time, the diamond is not put on the jewel installation section 130), and the measured value of a luminance meter 11 is read. Although the top of the jewel installation base 13 in the measurement visual field of a luminance meter 11 and the pedestal section 2 is constituted black, a luminance meter 11 detects \*\*\*\* from these tops, and shows few [ the pointer of a luminance meter 11 ] numeric values. Here, this pointer is set by the zero with a zero adjustment knob. The jewel installation base 13 is demounted from the insertion section 10, diamond D is horizontally put on the jewel installation base 13, it attaches in the insertion section 10 again, and the measured value by the luminance meter 11 is read. This measured value is the true brightness of diamond D.

[0058] Although that the cut excelled [ that ] also, for example in the parvus diamond of the number of carats has the more large number of carats according to measurement of such brightness, a big measurement-of-luminance value may be acquired compared with the bad stone of a cut. If the brightness exponent (for example, the brightness of the diamond in which the biggest brightness is shown for every carat is set to 100) on the basis of the brightness of the diamond which follows, for example, has the biggest brightness for every carat is defined, whenever [ diamond's corresponding to number of carats brightness ] can be known objective, and a cut of a diamond and the right and wrong of a quality can be judged easily.

[0059] In the instrument for observation or photography and the instrument for the measurement of luminance of this invention which were described above the configuration of mainframes 1a and 1b the distance of the internal surface of parietal bone of mainframes 1a and 1b, and a diamond -- abbreviation -- although the shape of the point of being equal to a semi-sphere is the most desirable, other than this, it can be alike and can also consider as the shape of the shape (the shape flatter than the shape of a semi-sphere of a dome, the shape of a dome more nearly longwise than the shape of a semi-sphere) of a dome, and a drill (the shape of the shape of a cone, and a pyramid etc.) Drawing 23 - view 26 shows the example of a configuration of mainframes 1a and 1b, and, in drill-like mainframes 1a and 1b, the drawing 25 , and the drawing 26 , the drawing 23 and the drawing 24 show the case of the dome-like mainframes 1a and 1b, respectively.

[0060] [Effect of the Invention] According to the observation of this invention or the instrument for photography described above, compared with the conventional instrument, Mr. \*\* according to the quality of a cut of a diamond can be arrested more vividly. Moreover, according to other instruments of this invention, while Mr. \*\* of the above diamonds can be arrested, other jewelry set around the noble-metals fraction and diamond with which the diamond is attached is observable by the mass color. Moreover, according to the instrument for the measurement of luminance of this invention, compared with the conventional instrument, the brightness of a diamond can be measured with a more sufficient precision.

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[Translation done.]